



ISG - Instituto Superior de Gestão

**THE GREEN ENERGY PROCUREMENT POLICY
AND ITS CONSEQUENCES:**

A GREEN LIGHT TO MAKE BUSINESS TURN SMARTER

Dissertação apresentada no Instituto Superior de Gestão
Para obtenção do Grau de Mestre em Gestão da Energia

Orientador: Professor Doutor Rui Moreira de Carvalho
Co-orientador: Professor Nuno Gaspar Oliveira

LISBOA
(2013)

Nota: Este trabalho de investigação foi produzido com o apoio do CIGEST - Centro de Investigação em Gestão, dentro da linha de investigação de Ambiente e Sustentabilidade

**THE GREEN ENERGY PROCUREMENT
POLICY AND ITS CONSEQUENCES:
A GREEN LIGHT TO MAKE BUSINESS TURN SMARTER**

ABSTRACT

Concepts such as Sustainable Development and Green Procurement are increasingly present today. Green Procurement has a great overall importance in reducing environmental impacts regarding consumer goods and services and, consequently, the way of living in society as well as the whole world, in a Sustainable Development perspective.

The general framework of the study focuses on the United Nations and the European Union's Green Procurement policy that has consequences on the Portuguese Energy Policy and affects purchases and businesses.

The main concepts to develop are the Sustainability, the Sustainable Development and the Green Procurement.

Green Procurement must be implemented in a holistic way organizations and be in consumers concerns, by including environmental and social considerations into its acquisition practices.

Lacroix (2011) defines Green Procurement by the following way:

Green procurement is the purchasing of products or services which have a lower impact on the environment over their whole life cycle than the standard equivalent. (P. 2)

The main objective of the study is to identify the current policies of green procurement policies in the UN, EU and in Portugal and, consequently, in organizations, and to explore the issues that may affect the people's behavior and business and activity.

Key Words

Sustainability; Energy Management; Green Energy Procurement; Energy Policy Planning; Green Business Development

RESUMO

Conceitos como o de Desenvolvimento Sustentável e *Green Procurement* estão cada vez mais presentes nos dias de hoje. O *Green Procurement* tem uma grande importância na redução dos impactos ambientais do consumo de bens e serviços e, consequentemente, numa perspectiva de Desenvolvimento Sustentável na sociedade e no mundo.

O enquadramento geral do estudo centra-se na política de *Green Procurement* das Nações Unidas e da União Europeia que tem consequências na Política Energética Portuguesa, nas aquisições e negócios.

Os principais conceitos para o desenvolvimento são a Sustentabilidade, Desenvolvimento Sustentável e Compras Ecológicas.

O *Green Procurement* deve ser, implementado de uma forma holística nas organizações e estar presente nas opções dos consumidores, através da inclusão de critérios ambientais e sociais nas suas práticas de aquisição.

Lacroix (2011), define Compras Ecológicas pela seguinte forma:

Compra de produtos ou serviços que têm menor impacto ambiental, ao longo do seu ciclo de vida, comparado aos seus equivalentes standard (P. 2)

O principal objectivo do estudo é identificar as actuais Políticas de Compras Ecológicas na ONU, UE e em Portugal e, consequentemente, nas organizações, e analisar problemas que podem afectar o comportamento dos consumidores e das actividades de negócios.

Palavras-Chave

Sustentabilidade; Gestão da Energia; *Green Energy Procurement*; Planeamento da Política Energética; Desenvolvimento Sustentável de Negócio

ACKNOWLEDGMENTS

First of all, I thank my family for the support, particularly, my nephew for the inspiration and company.

I also thank you, Professor Rui Moreira de Carvalho and Nuno Gaspar de Oliveira, for the support and commitment in the whole process of researching and writing this study

Thank you all.

ACRONYMS AND ABBREVIATIONS

ES - Energy Sustainability

EU - European Union

ICLEI - International Council for Local Environmental Initiative

IRENA – International Renewable Energy Agency

GP Green Procurement

GPA - Government Procurement Agreement -

GPP - Green Purchasing Policy

GSCM Green Supply Chain Management

REP - Renewable Energy Policy

SD - Sustainable Development

SPP - Sustainable Public Procurement

UN - United Nations

UNEP - United Nations Environment Programme

WTO - World Trade Organization

UNDESA - United Nations Department of Economic and Social Affairs

TABLE OF CONTENTS

ABSTRACT	7
RESUMO	9
ACKNOLEDGMENTS.....	11
ACRONYMS AND ABBREVIATIONS.....	13
INDEX - FIGURES.....	19
INDEX – TABLES.....	20
INTRODUCTION	21
Definition of the Problem.....	21
Research Objectives	23
Dissertassion Structure	24
CHAPTER 1. DEFINITION OF THE MAIN CONCEPTS	25
1.1 The Relationship between Sustainable Development and Economic Development: a Good Reason for a Green Procurement Policy	26
1.2 The Concept of Green Procurement and Green Supply Chain Management.....	27
CHAPTER 2. GREEN PROCUREMENT POLICY	33
2.1. The United Nations Framework	33
2.2. The European Union Framework	35
2.3 The Portuguese Framework.....	37
CHAPTER 3. THE GREEN ENERGY FRAMEWORK WITHIN GREEN PROCUREMENT	41
3.1 General Framework	41
3.2. Renewable Energy Policy Landscape	41
3.3. Renewable Energy in the International Policy: UN and IRENA	42
3.4. Renewable Energy Procurement in the EU's Policy	43

3.5. Renewable Energy Procurement in the Portuguese Policy	45
CHAPTER 4. THE GREEN ENERGY ECONOMICS AND ITS EFFECTS ON CONSUMERS.....	49
4.1 Renewables Framework and Consumers' Choice Drivers	49
4.2 A Liberalized Market – A New Framework to Portuguese Consumers.....	52
CHAPTER 5.METHODS.....	53
5.1 Scope	53
5.2 Questionnaire Data Analysis	56
5.2 Characteristics of the Respondent	62
5.2.1. Gender.....	62
5.2.2. Age.....	63
5.2.3. Graduation	64
5.2.4. Residence	65
5.3 Study Compliant Data Analysis - Univariate Analysis	66
5.3.1. Information Collection.....	66
5.3.2. Energy Sustainability Information Collection	67
5.3.3. Organizations and the Energy Sustainability Concept	68
5.3.4. Green Procurement Concept.....	69
5.3.5. Green Procurement Research	69
5.3.6. Principal Energy Source to Contract in 2020	70
5.4 Study Compliant Data Analysis - Bivariate Analysis	72
5.4.1. Information Collection & Energy Sustainability Information Collection	72
5.4.2. Energy Sustainability Information Collection & Green Procurement Concept	78
5.4.3. Energy Sustainability Information Collection & Green Procurement Research.....	79

5.4.4. Energy Sustainability Information Collection & Principal Energy Source to Contract in 2020	80
5.4.5. Energy Sustainability Information Collection & Organizations and Energy Sustainability Concept	82
5.4.6. Green Procurement Concept & Green Procurement Research.....	84
5.4.7. Green Procurement Concept & Principal Energy Source to Contract in 2020	85
5.4.8. Age & Green Procurement Concept.....	87
5.4.9. Age & Green Procurement Research.....	88
5.4.10. Gender & Green Procurement Concept.....	89
5.4.11. Gender & Principal Energy Source to Contract in 2020	90
5.4.12. Residence & Green Procurement Concept	91
5.4.5. Study Analysis Summary	92
5.4.5.1. Respondents' Profile.....	92
5.4.5.2. Univariate Analysis Summary	92
5.4.5.3. Bivariate Analysis Summary	93
5.4.5.4. Green Procurement Concept - Analysis Summary – Open Question....	96
CHAPTER 6. CONCLUSIONS	99
CHAPTER 7 FUTURE CONSIDERATIONS.....	107
BIBLIOGRAPHY	113
APPENDIX	117

INDEX - FIGURES

Fig. 1 - Proportion of electricity generated from renewable sources of 2010 (% of gross electricity consumption)	49
Fig. 2 - Proportion of electricity generated from renewable sources of 2010 (% of gross electricity consumption)	50
Fig. 3 – Evolution of Energy Prices in Portugal.....	52
Fig. 4 - Gender.....	62
Fig. 5 - Age	63
Fig. 6 - Graduation	64
Fig. 7 - Residence	65
Fig. 8 – Energy Sustainability Information Collection	67
Fig. 9 – Green Procurement Research	69
Fig. 10 – Gender & Nuclear	90
Fig. 11 – Estimated Renewable Energy Share of Global Electricity Production in 2011	104
Fig. 12 – Power Growth by Sector and Fuel/Region.....	108
Fig. 13 – Energy Demand Growth	109
Fig. 14 – Energy Demand Growth and Supply	109
Fig. 15 – Renewables Market Share	110

INDEX – TABLES

Table 1 – Variables Classification.....	60
Table 2 – Information Collection.....	66
Table 3 – Organizations and the Energy Sustainability Concept.....	68
Table 4 – Green Procurement Concept.....	69
Table 5 – Principal Energy Source to Contract in 2020.....	70
Table 6 – Energy Sustainability Information Collection & Internet.....	72
Table 7 - Energy Sustainability Information Collection & Newspapers/Magazines...	73
Table 8 - Energy Sustainability Information Collection & Television.....	74
Table 9 - Energy Sustainability Information Collection & Conversation.....	75
Table 10 - Energy Sustainability Information Collection & Journals.....	76
Table 11 - Energy Sustainability Information Collection & Other.....	77
Table 12 - Energy Sustainability Information Collection & GP Concept.....	78
Table 13 - Energy Sustainability Information Collection & GP Research.....	79
Table 14 - ES Information Collection & Principal Energy Source in 2020.....	80
Table 15 - ES Information Collection & Organizations and ES.....	82
Table 16 - GP Concept & GP Research.....	84
Table 17 - GP Concept &Principal Energy Source in 2020.....	85
Table 18 - Age & GP Concept	87
Table 19 - Age & GP Research.....	88
Table 20 - Gender & GP Concept.....	89
Table 21 - Residence & GP Concept.....	91

INTRODUCTION

Most people spend more time and energy going around problems than in trying to solve them.

Henry Ford

Definition of the Problem

The problem of the study is to understand how a Green Procurement (GP) policy and the change of attitudes and practices of institutions for social, economic and environmental development can benefit and enable Sustainable Development (SD).

The problem defined is as follows:

How will the European Green Procurement Policy evolve between 2012 and 2020 and what could be the consequences for the Portuguese Energy Policy?

Other issues are:

- How will the UN's, EU's and the Portuguese Green Procurement Policy affect the energy acquisition of organizations and the market, considering two aspects: economic development and Sustainable Development (the economic, social and environmental) in Portugal?
- How will the procurement policy have an impact on value creation considering the environmental, economic and social development?

The effect that human beings have been exercising over the years on the environment is increasingly evident and therefore the concern with the environment has been increasing in every Nation of the world. We also assist the growing resource scarcity, climate change, deforestation, unemployment, crisis, famine, poverty, along with other issues such as health concerns and biodiversity (e.g., MEA, 2005).

To stop this concerning framework, the EU, based on the UN's practices, establishes directives that undermine the decisions of public and private institutions, specifically in the procurement process. The emerging need to take into account the environmental value of products and services that meet the needs of populations, without compromising future generations, has become a fact.

The public and private institutions face several challenges which involve multiple organizational efforts of adaptation that meet the needs of today's society. The inclusion of environmental criteria in the hiring process facilitates the interconnection of the various actions and policies which in turn, enable a wider and more sustainable approach to environmental issues and charges and goals. According to Brammer & Walker (2010), the supply management profession is increasingly being called upon to contribute to broader organizational goals of sustainable development through the inclusion of social and environmental criteria within procurement processes

The issue of green purchasing can be an example for other sectoral areas that by showing a change in behaviors, processes of production of goods and services, more eco-efficient, towards sustainability.

The study focuses on the energy sector that is considered one of the most important issues of the century: "so energy is embodied in everything that we use, and in order to have economic growth, we need to have lots of energy and preferably nice and cheap energy. So not only do we need carbon neutral energy, we need large quantities of it." (Hall, 2012)

This study should be current and enable the understanding and realization that the actions of institutions more socially and environmentally responsible, can play a major role for SD and to interested parties on the subject: the scientific community and to the net of companies.

The study is involved in a very current framework of great importance both for the area of society in general as to researchers, given the need for further research on the theme.

Research Objectives

The main objective of the study is to identify the current policies of environmental purchasing practices in the UN, EU and in Portugal and, consequently, in both public and private institutions, considering two vectors: the GP Policy and the SD. We want to understand their capabilities and connections that may affect the business and activity of the companies.

The secondary objectives of this work are:

- Understand whether and how GP is, or is not, only possible and / or advisable and simple, in the perspective of creating value, increasing competitiveness, reducing costs and enhancing credibility for all stakeholders;
- Comprehend the consequences of the UN's and the EU's frameworks to the Portuguese Energetic Policy and how they will affect the businesses and companies of the country ;
- Review the relevance and role of GP within an organization and the population in general that aim to purchase energy responsibly at the economic, social and environmental level.

For this purpose, we will carry out an approach that contextualizes all the essential concepts of the problem. Then, we will refer the frameworks of the principal themes: Sustainability, SD, GP and GP Policy, which allow a deeper conceptual and theoretical basis of the study.

Dissertassion Structure

The present study about Green Energy Procurement id divided in seven chapters. The first one defines the important concepts to development of the study. The second chapter refers to the Green Procurement Policy Framework and the following chapter is related to the energy sector within the Green Procurement framework. chapter four defines how do Green Energy Economics affect consumer's choice. The fifth chapter explains the method the author followed on the study and the six and seven chapter are, respectively, conclusions and future considerations in what concerns Green Procurement.

CHAPTER 1. DEFINITION OF THE MAIN CONCEPTS

Sustainability emerges as a central concept when focusing on the world's issues. The essence of sustainability is related to what can be maintained over time (Tavares, 2009). Sustainability crosses some organizational fields: economic, social, cultural and environmental assets of human society. Therefore, it is understood that development issues are beyond economic growth.

Concerning social sustainability, Goodland & Daly (1996) argue that it is achieved by systematic citizen participation in community. Community cohesion, cultural identity, diversity, courtesy, tolerance, humility, compassion, patience, fellowship, brotherhood, love, honesty standards, discipline and law are the main components of social sustainability. Thus, to achieve a social sustainability stage, it is necessary to keep "moral capital" and made up value and equal rights.

Regarding the economic area, Hicks (1946, in Goodland & Daly, 1996), argues that income is defined by the amount you spend over a certain period of time. Economic sustainability relates not only to the importance of why you are consuming and to the amount of capital that you will spend. There are three forms of capital: natural, social and human. The natural capital (eg, biodiversity, ecosystems) is what is most likely to be related to this concept by the fact that, due to human development, it is becoming increasingly scarce and, simultaneously, very important.

Goodland & Daly (1996), defend environmental sustainability seeks to improve human welfare. However, it is essential to protect sources of raw materials that meet the needs of consumption. Humanity must learn to live within the limitations of the biophysical environment, and at the same time, address the needs of production and sustainable consumption. You can not address the environmental sustainability without taking into account social sustainability: the behavior of society is a crucial point.

1.1 The Relationship between Sustainable Development and Economic Development: a Good Reason for a Green Procurement Policy

In the contemporary world, we find levels of unemployment, poverty and social exclusion. This represents, along with the climate change, a remarkable and socially shared challenge to reverse this situation, also attending to the quality of life within the limits of planet Earth (e.g., UNEP, 2013).

In this context, it is necessary to take into account two main assets: SD and the promotion of businesses and, therefore, try to promote a good management of their economic activity. Thus, the social and environmental responsibility must be clearly present in the policies of the companies of each country.

Rego *et al.* (2007), based on the work of Fergus & Rowney (2005), state the following:

*Today, most companies include some aspects of sustainable development into their options, usually related to environmental and social assets. However, they are not implemented them consistently in all levels of the organization, considering a holistic view.*¹(P.169)

In our perspective, this analysis could also be applied to the Procurement Policy (PP) adopted by each organization. Today, it is urgent to define ways of creating synergies between SD and economic development. In order to succeed, companies must be aware of policies and best practices regarding ethical, social and environmental responsibility.

Companies should rely on a central issue: transparency. Sustainability must be a part of their political, social and business agendas by reporting on environmental and social issues. Rego *et al.* (2007), subscribe this idea:

A major number of investors, traditionally called socially responsible investors, (...) are convicted that sustainability must be integrated in the prior processes of a purchase evaluation of a determinate organization. Calvert analysis (...) includes an assessment of a range of business practices in the following areas: environmental performance, governance, work management, including evaluation of women's representation and

¹ Translated by the author: "Hoje, a maior parte das empresas inclui alguns aspectos do desenvolvimento sustentável nas suas opções, usualmente relacionados com aspectos ambientais e sociais. Contudo não implementam consistentemente em todos os níveis da organização, de um modo holístico".

*minorities' administration, human resources policies and the practices in abroad activities: the rights of indigenous people and product safety.*²(P.194)

According to Elkington (1994), the author that defined the concept of 'Tripple Bottom Line', entrepreneurial success is taken into account not only by the profit generated, but also by the integration of organizational performance in economic, social and environmental management through innovative solutions and the identification of the concepts of transparency and integrity, better defined as accountability (e.g., Bovens, 2007) .

Our analysis leads to some initial assumptions:

- We need a global joint action locally focused towards more sustainable forms of production and consumption;
- Organizations should make an effort to purchase products and services that are less harmful to local and global environments;
- Both public and private sector organizations may implement purchasing practices that include environmental and social considerations—Green Procurement (GP).

1.2 The Concept of Green Procurement and Green Supply Chain Management

SD is critical and indispensable for organizations seeking value creation and, therefore, success in a global world: *organizations are now at a point where they can decide to follow the current 'business as usual' model or recognize the opportunity to take the essential steps that will move them forward to a sustainable economic, social and environmental future.* (Pegram et al., 2009). This situation is characterized by great

² Translated by the author: "Uma quantidade crescente de investidores, tradicionalmente denominados investidores socialmente responsáveis (...) estão de tal modo empenhados que os critérios de sustentabilidade têm vindo a ser fortemente integrados nos processos analíticos que antecedem as avaliações de uma empresa para uma eventual compra (...) a análise de Calvert (...) inclui uma avaliação de um leque de práticas empresariais nas seguintes áreas: desempenho ambiental; governança; gestão de trabalho, incluindo uma avaliação de aspectos relacionados com a representação das mulheres e de minorias na administração, as políticas de Recursos Humanos e as práticas nas operações no estrangeiro: os Direitos dos povos indígenas; e a segurança dos produtos."

challenges and opportunities for organizations, particularly with regard to its procurement policy. There is a major awareness of environmental protection which is on the bases of the green trend to preserve Earth's resources in order to improve their social, economic and environmental resources. According to Salam (2008), we assist watch nowadays increasing awareness of environmental protection worldwide, the green trend towards conserving the Earth's resources and protecting the environment is overwhelming. This awareness is consistent with the major guidelines followed by the GP efforts, commitments and policy trends.

The concept of GP has been suffering an improvement over the years as new concerns emerge from the need to make it "greener".

One of the definitions pointed out by the Report on Sustainable Procurement in the United Nations System (2004)³, the designation of GP may be considered as "the process by which public or private organizations buy goods and/or services to fulfill various needs of an organization." (P.3)

As stated in the Background Paper on Sustainable Procurement and Environmental Management Programmes for the United Nations System (2004, P.1)⁴, the base values of procurement are the following: effectiveness, efficiency, competition, transparency, equitable distribution and development; the choices of goods and services that should be made are also important.

As far as the economic perspective the main considerations are: best value for money, price, quality availability and functionality.

Considering the environmental aspects in GP we must highlight the impacts on the environment that the product and/or service has after its whole life-cycle, from cradle to grave or, ideally, from cradle-to-cradle (e.g. Vermeulen & Ras, 2006)

³ Report prepared for the Environment Management Group as requested at 8th Meeting, 1st September 2004

⁴ This paper was prepared for the Environmental Management Group by UNEP/DTIE, with Annexes 1 and 2 provided by IAPSO and the World Bank, respectively.

The procurement social concerns are related to the effects of purchasing decisions on issues such as poverty eradication, international equity in the distribution of resources, labor conditions and human rights.

It must be underlined the social mark that integrates the definition of GP. An example is one given by the Report on Sustainable Procurement in the United Nations System (2004), is that “historically a direct or indirect link has always been made between the performance of the procurement function and the collective fulfillment of social and economic objectives.”(P.3)

Considering GP the Business Council for Sustainable Development Portugal (2011), emphasis once more “the integration of environmental and social concerns in the acquisition criteria that go beyond the economic ones.”⁵ (P.3)

In the literature about the issue of GP, many authors state the importance of GP going far beyond the economic interests, giving a central role to environmental as well as social concerns and commitments. Here are some examples for the definitions of GP by different authors:

Carter et al. (1998, in Salam, 2008), defined GP as “consisting involvement in activities that include the reduction, reuse and recycling of materials in the process of purchasing.” (P.1)

Carter & Jennings (2002), in Brammer & Walker (2010), argue that GP policy should consider five issues: the environment, diversity, human rights, philanthropy and security.

Zhu & Sakas (2006, in Salam, 2008), emphasize that with the increasing awareness of environmental protection, the green trend towards conserving earth’s resources is

⁵ Translated by the author: “Em suma, o *procurement* sustentável é a integração, nos critérios de aquisição, de preocupações ambientais e sociais além das económicas.”

developing in order to improve the company's social, economic and environmental performance by changing their strategies.

Salam (2008) refers the importance of an assessment made by organizations or companies in order to take in consideration the environmental consequences of a product at all the various stages of its lifecycle. In this perspective, GP implies a selection of products and services to be acquired, so that this process minimizes environmental impact.

Lacroix (2011) thinks that organizations adopt GP practices by taking four different approaches: "procuring eco-labeled products or services, in-house product or service evaluations, third party product or service evaluations and supply chain initiatives" (P.3). According to him, GP can be defined as:

The purchase of environmentally preferable products and services in accordance with one or more of the established "green" procurement preference programs. Green procurement is the purchasing of products or services which have a lower impact on the environment over their whole life cycle than the standard equivalent.(P.3)

The concept of GP integrates the concept of Green Supply Chain Management (GSCM). Brammer & Walker (2010) express Vachon & Klassen (2006) ideas, by saying that: "As research concerned with green supply chain management developed, key themes included investigating the antecedents of engagement with environmental issues in supply management" (P. 454) (Fashion Indie)

The purchases of an organization, heading along with environmental decision making, can increase the performance of products and services through a Green Purchasing Policy (GPP). Carter et al. (1998, in Salam, 2008), defined that the GP policy is related to how the organization supply, considering reduction, reuse and recycling of materials in the purchase process: if an organization holds a GPP, it is required a GSCM.

Srivastava (2007), quoted by Abdallah, Diabat & Simcha-Levi determines GSCM as the integration of environmental thinking in the chain, including product design, supply and selection of materials, manufacturing processes, as well as the distribution of the final product to consumers and product management, after its useful life.

We may consider the GPP and GSCM are reciprocal with a main focus on sustainability and also on SD. These concepts are particularly important in what concerns government's commitments and, consequently, the choices made by countries, companies and communities.

CHAPTER 2. GREEN PROCUREMENT POLICY

2.1. The United Nations Framework

There are several global organizations that enhance GP through their programs and policies:

- The United Nations (UN): Division for Sustainable Development - fosters GP through shifting consumption habits;
- The UN: Division of Technology, Industry and Economics – Consumption and Production Programme - provides practical tools, information to support GP and facilitates global networking;
- The International Green Purchasing Network - shares information internationally, promotes the increasing growth of greener product and service offers)
- The World Trade Organization (WTO) – provides a forum for governments to negotiate trade agreements that designed the Government Procurement Agreement (GPA) which aim is to “open up to international competition as much as possible the government procurement of its Parties”⁶. It is a plurilateral agreement which allows the inclusion green and sustainable assets into documentation.

Political discussions at UN level are reflected on procurement and SD work:

- Agenda 21;
- The Johannesburg Plan of Implementation of World Summit on Sustainable Development (September 2002);
- The 10 year framework of Programmes for Sustainable Consumption and Production;

⁶ http://www.wto.org/english/thewto_e/minist_e/min11_e/brief_gpa_e.htm

- The Marrakech Task Force on Sustainable Public Procurement;
- The United Nations Environment Program's (UNEP) 23rd Governing Council decision.

The Agenda 21 Programme motivates governments to achieve a greener procurement by changing consumption patterns. As stated in the Report on Sustainable Procurement in the United Nations System (2004)⁷, “Agenda 21 recognized the need to work on the inclusion of sustainable development considerations (chapter 4.23)”(P.4). It also says that this was reiterated in the expanded 1999 UN Guidelines for Consumer Protection in the 54th paragraph: “Governments and international agencies should take the lead in introducing sustainable practices in their own operations, in particular through their procurement policies” (P.4).

According to the same report, the Johannesburg Plan focus on the need to take sustainable considerations in procurement, to promote and diffuse of environmentally sound goods and services (chapter III. 19) (P.4).

In what concerns the International Expert Meeting, held in Marrakech (June 2003), on a 10 year framework of Programs for Sustainable Consumption and Production, it was stated that “UNEP and UNDESA (...) explore de possibilities of establishing a UN code on sustainable procurement and environmental management” (Sustainable Procurement in the United Nations System, 2004) (P.4).

The Marrakech Task Force on Sustainable Public Procurement, leaded by UNEP and UNDESA, is an international initiative, launched by the government of Switzerland in 2005, to promote Sustainable Public Procurement (SPP) in developing and developed countries. It promotes SPP through training and assistance and facilitates dialogue and work amongst stakeholders and countries on SPP.

⁷ Report prepared for the Environment Management Group as requested at 8th Meeting, 1st September 2004

Finally, the UNEP's 23rd Governing Council decision requires, in order to report its own procurement practices, governments to share their sustainable procurement experiences.

These documents helped UN's organizations to develop the designation and definition of GP. As settled in the International Council for Local Environmental Initiative's (ICLEI) Green Purchasing Good Practice Guide (2000), GP "is a strictly regulated area and introduces specific criteria for choosing certain products and services or tender must respect the established in European policy and legislation" (P.14).

2.2. The European Union Framework

According to the Report on Europe 2020: a Strategy for Smart, Sustainable and Inclusive Growth (2010), the European procurement policy is supported by three objectives:

- *Smart growth: developing an economy based on knowledge and innovation;*
- *Sustainable growth: promoting a more resource efficient, greener and more competitive economy;*
- *Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion. (P.3)*

Focused on the second objective, the EU GP policy is formed by Procurement Directives in the single market context: there are two directives that aim to "simplify, clarify and modernize the existing European legislation in GP"⁸ which, according to the Proposal for a Directive of the European Parliament and of the Council on Public Procurement (2011), are a product of an evolution that started in 1971(P.5):

- Directive 2004-18-EC: The present directive is centered, firstly, on definitions and legal principles, rules and contracts, rules on public works concessions,

⁸ <http://www.greenpublicprocurement.ie/#>

rules governing design contests and statistical obligations, executory powers and final provisions;

- Directive 2004/17/EC: This directive is based on general provisions applicable to contracts, rules applicable to contracts, rules governing service design contests and statistical obligations and executory powers and final provisions;
- Proposal for a Directive 2011/0438: In spite of making the rules better suited to deal with the evolving political, social and economic context, the public procurement directives were reviewed (through a consultation of stakeholders conducted by the Commission) in order to adapt them better to the new challenges faced by public procurers and economic operators alike. The main contents of the document are: context of the proposal, consultation of interested parties and impact assessment, legal elements of the proposal, budgetary implication and additional information.

Towards a more sustainable Europe, the EU Sustainable Consumption and Production Action Plan (2008) considers the improvement of eco-innovation as a GP's key driver by and the Handbook on Environmental Public Procurement (2004) sets the essential of the step by step process of achieving GP.

The Sustainable Consumption and Production Action Plan can be characterized as following:

*It includes a series of proposals on sustainable consumption and production that will contribute to improving the environmental performance of products and increase the demand for more sustainable goods and production technologies. It also seeks to encourage EU industry to take advantage of opportunities to innovate.*⁹

⁹ http://ec.europa.eu/environment/eussd/escp_en.htm

The Environmental Public Procurement Handbook (2009) deals mainly with:

- The essentials of GP;
- The strategies to buy green;
- The organization of public procurement;
- The requirements of a contract;
- How to select suppliers, service providers or contractors;
- The criteria to award a contract;
- The clauses of the performance of the contract.

2.3 The Portuguese Framework

The Constitutional Government Program defines a National Strategy for Energy (ENE 2020), approved by the Council of Ministers No. 29/2010, based on energy efficiency, reducing energy consumption and the choices that represent lower consumption of energy.

This line of action is also a part of the National Strategy for Green Public Procurement, as well as its development strategy until 2013. The Strategy aims the constant information of environmental criteria in public procurement process to acquire goods, services and works in order to reduce the environmental impacts. The role of public procurement is undeniable when we refer SD as there is a reciprocal relationship between economic growth, social development and environmental protection.

The legislative framework on Green Public Procurement includes:

- The Council of Ministers Resolution No. 49/2007 of 28th March - approves the principles of good governance of public corporations, improving the transparency of the Government through strategies focused on the sustainability of economic, environmental and social domain.

- The Council of Ministers Resolution No. 65/2007 of 7th May - approves the 2008/2010 National Strategy for Public Green Procurement, incorporating environmental criteria, sustainability policy and economic benefits.
- The Law Decree No. 278/2009 of 2nd October - amends the Code of Public Contracts approved by the Law Decree No. 18/2008 of 29th January which puts across the Directives 2004/17/EC and 2004/18/EC. The Public Contract Code regulates the procurement regime within: the scope of public procurement, the procurement procedures, the substantive regime of administrative contracts and the breach of regulations.

Due to the lack of legislation focused on the private sector, we expect the implementation of GP practices which naturally depend on the commitment of top management of organizations.

According to the collected information, the legislation must be clearer and must set out some incentives that, based on the Report of the State of the Environment (2010), enhance the development of GP criteria in order to:

- *Ensure the supply market, products and services with an appropriate environmental performance and reduce the environmental impacts of the consumption of goods and services;*
- *Encourage the improvement of procurement practices and procurement of goods and services respecting the environmental values;*
- *Reduce consumption of materials and energy, waste and emissions to different environmental compartments and promote sustainable behavior patterns;*
- *Provide incentives to economic sectors for the development of new technologies and innovative products;*
- *Achieve greater efficiency in the financial sector state. (P.25)¹⁰*

¹⁰ Translated by the author: -" Garantir a oferta, no mercado, de produtos e serviços com um desempenho ambiental adequado e a redução dos impactes ambientais associados ao consumo dos bens e serviços;

The efforts made at the international, European and national level, will together help to improve and upgrade the requirements to be used in GP procedures by means of shared efforts and resolutions towards a greener future. GP must be a conviction as well as an obligation.

-
- Estimular a melhoria das práticas de contratação e de aquisição de bens e serviços com respeito pelos valores ambientais;
 - Reduzir o consumo de materiais e energia, a produção de resíduos e de emissões para diferentes compartimentos ambientais e promover padrões de comportamento sustentáveis;
 - Fornecer aos diversos sectores económicos incentivos para o desenvolvimento de novas tecnologias e produtos inovadores;
 - Alcançar uma maior eficiência financeira no sector Estado.”

CHAPTER 3. THE GREEN ENERGY FRAMEWORK WITHIN GREEN PROCUREMENT

3.1 General Framework

Since ancient times, energy is one of the major factors in order to achieve SD. Although energy use contributes to socio and economic development, it also contributes to environmental degradation. So, considering the growth of energy demand (Abu-Ruman & Craminckel, 2009), accessing to reliable and affordable energy services is essential in order to improve development (economic and social) and eliminate poverty. (UN-Energy, 2005). It is also important to ensure that green power (*electricity generated from clean, renewable sources like wind, solar, small hydroelectric, bio-energy and geothermal* (Krembs & A. Maddox, 2004)) is procured: the renewable energy market needs a steady and sustainable growth.

Regarding the green energy procurement, there are obstacles that include capital constrains, lack of awareness, lack of incentives, regulation and financing mechanisms. According the UN's Report "Energy for a Sustainable Future", these barriers can be overcome by a combination of measures: policy and regulation, codes and standards, financial incentives, access to finance, institutional capability and capacity development and informational programmes. (P.21)

3.2. Renewable Energy Policy Landscape

Weischer et. al. (2011), define Renewable Energy Policy (REP) as the set of rules, regulations and government actions that lead to an increased share of renewable in total electricity consumption in the line with a country's development objectives (P.9).

Growth of renewables is strongest where and when the policy-makers in charge have established favorable conditions. Today, we can benefit from a rich set of policy experiences that have been made at national and local levels¹¹.

In the same line and considering the main driver of renewable energy growth is policy, the ones that promote those policies are:

- Market barriers;
- Resource scarcity;
- Diversification of the energy mix with a security premium;
- The damage of human health and local environment;
- Dynamic industrial policy prospect.

The renewable energy policy consists of instruments which can be regulatory policies, fiscal incentives and public financing:

Regulatory policies: feed-in tariffs, utility quota obligation, net metering, obligation and mandate and Tradable Energy Certificate (REC);

Fiscal Incentives: capital subsidy, grant or rebate, tax incentives and energy production payment;

Public Financing: public investment, loans or grants and public competitive bidding.

3.3. Renewable Energy in the International Policy: UN and IRENA

The theme “energy” has gradually become an imperative issue on the top of international political agenda. Environment and development are the major concerns and that is why UN’s agencies and IRENA are a key factor in what regards security of energy supply, climate change, and poverty eradication. The agency of UN which delivers the most on energy: UN – Energy: the agency is formed by 21 members and its

¹¹ <http://www.ren21.net/>

activities are mainly based on energy access, renewable energy, and energy efficiency. The publications related with energy are: “Large Scale Energy Efficiency Programs based on CFL’s Approaches, Design Issues and Lessons Learned” (World Bank, 2009) which deals with residential energy efficiency programmes and important operational elements, documents, lessons, results and other relevant data; in what concerns the services sector: “Public Procurement of Energy Efficiency: Lessons from International Experience” (World Bank, 2009), that looks at a largely untapped energy efficiency markets in the public sector; and related to the industrial sector: “Policies and Measures to Realize Industrial Energy Efficiency and Mitigate Climate Change” (K. Price & T. Mckane, 2009). We consider that this sector is a core concern and works that focus on this issue add value and increase awareness: “The industrial sector for a significant share of global energy use and carbon dioxide, and this document shows based on the three UN’s – Energy Thematic Clusters, the policies and programmes to promote energy efficiency, as well as its procurement” (P. 5). There is no doubt about it, it gives emphasis to this sector on 53th paragraph of the Johannesburg Conference Report: “Green Procurement (...)” (P.21)

3.4. Renewable Energy Procurement in the EU’s Policy

The European Union applies the GP Policy to different sectors: copying and graphic paper, cleaning products and services, office IT equipment, construction, transport, furniture, food and catering services, textiles, gardening products and services, windows, glazed doors and skylights, thermal insulation, hard floor covering, wall papers, combine heat and power, road construction and traffic signs, street lightning and signals, mobile phones, indoor lightning and, finally, electricity.

Regarding the electricity sector, the European policy includes the following documents:

- The Energy Efficiency Directive: it regards the definitions and energy efficiency targets, the efficiency in energy use, the efficiency in energy supply, the horizontal provisions and the final provisions;
- The Energy Service Directive - 2006/32/EC – it concerns the energy savings target, the promotion of energy end-use efficiency and energy services and the final provisions;
- The Directive 2009/28/EC – it focuses on the promotion of the use of energy from renewable sources and amending and subsequently repealing directives 2001/77/EC and 2003/30/EC;
- The Directive 2004/8/EC - it relates to the promotion of cogeneration based on a useful heat demand in the internal energy market and amending directive 92/42/EC;

The GPP for Electricity Criteria – it provides for each product or service group two sets of criteria:

- The core criteria are those suitable for use by any contracting authority across the Member States and address the key environmental impacts. They are designed to be used with minimum additional verification effort or cost increases

- The comprehensive criteria are for those who wish to purchase the best products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality;
- The Guideline for Green Electricity – it was provided within the framework of the European union project “Buy Smart + - Green Procurement in Europe” funded by the Program “Intelligent Energy – Europe”. It also includes the considered products and related criteria, the relevant environmental labels and the practical instructions for Green Procurement and use phase;
- The Electricity Technical Background – it references the background of the issue, the market availability, the key environmental impacts, the costs considerations, the public procurement needs, the conclusions, the relevant European legislations and policies and the existing standards and eco-labels and other info sources;
- The Calculation Toolkit for Green Electricity – a data sheet which is applicable for the calculation of the electricity costs of different offers/contracts. It needs the following inputs: the provider name and title of the product, the basic information of the electricity consumption structure and the price structure of the electricity offer. In return, it outputs the total electricity costs per year, the total electricity costs per contract period and the total electricity costs per MWh (€/MWh).

3.5. Renewable Energy Procurement in the Portuguese Policy

The way towards sustainability is based on the each Government decisions and policies. Taking into account its Energy Policy, the Portuguese legislation has been updated through the last decade aiming to reduce the energy dependence, to development of

endogenous resources, to reduce environmental effects and to increase supply efficiency. One of the regulatory tools is the feed-in tariffs, which provide producers, under a special regime, using renewables and cogeneration, a higher remuneration. There are three main objectives: to improve new technologies, to adapt remuneration for mature technologies and to incorporate directives issued by the European Union (Brito & Neves, 2012). Another fiscal tool is the incentives: “the grating incentives for energy production using clean sources have been internalized in the remuneration models”. It aims to reduce the emission of greenhouse gases, to diminish energy losses and to protect the environment.

In what concerns the legislation scenery on the special regime of electricity production in Portugal, the following diplomas were developed:

In 1988, the Decree-Law 189/88 – for individuals or companies, private or public, under legal, technical and security requirements, to generate, electricity from any type and sell it to the grid – the special regime production;

In 1999, the Decree-Law 168/99- although with different models and formula (since its update is made trough economic indicators), it is applied to renewables and cogeneration and introduces three new items: the fixed remuneration (avoided investment costs), the variable remuneration (avoided operation costs) and the environment remuneration avoided greenhouse gases emissions). It also integrates an income related to the prevented energy losses in the grid;

In 2001, the Decree-Law 312/2001 of December 10 - set more efficiency in the administrative procedures and ensured the same opportunities, objectivity and transparency in the decision making process – guarantee better access do the grid;

Regarding renewable energy, the succeeding diplomas were published:

In 2005, the Decree-Law 225/2007 of May 31 – defined the structure for the remuneration of renewables, the bigger incomes were from biogas and biomass and, due to its technical maturity, wind has the lowest energy selling price;

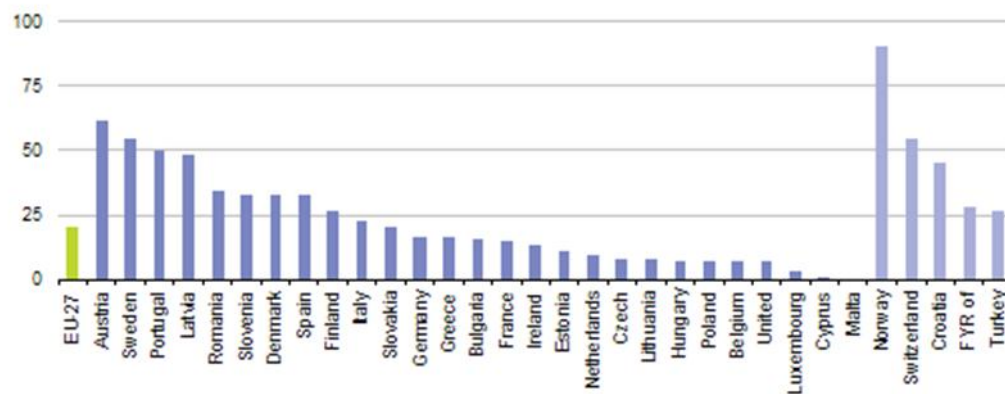
In 2011, the Decree-Law 5/2011 – reinforced forestry and biomass incentives, producers should clean the woods (to avoid fires).

There is also legislation regarding Microgeneration (Decree Law 118-A of October 25) for 7,75 kW individual clients and 11,04 kW for condos. Minigeneration, settled in 2011 (Decree Law 34/2011 of March 8) which is applied to 250 kW, or lower, plants; and Cogeneration (Decree Law 33/2010 of March 25) with a remuneration model defined by the efficiency of the plants and updated by trimester according to economical indicators evolution. (Pontes, 1994).

CHAPTER 4. THE GREEN ENERGY ECONOMICS AND ITS EFFECTS ON CONSUMERS

4.1 Renewables Framework and Consumers' Choice Drivers

The use of renewable energy has many potential benefits, including a reduction in greenhouse gases emissions, the diversification of energy supplies and a reduced dependency on fossil fuel markets (in particular, oil and gas). The growth of renewable energy sources may also be a motive which consumers consider important and may influence their energy procurement choices



Source: Eurostat (online data code: tsien050)

Fig. 1 - Proportion of electricity generated from renewable sources of 2010 (% of gross electricity consumption)

Source: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistics

The latest information available for 2010 shows that electricity generated from renewable energy sources contributed almost one fifth (19.9 %) of the EU-27's gross electricity consumption. In Portugal at least half of all the electricity produced was generated from renewable energy sources.

	Renewable energy total	Biomass & renewable wastes	Hydro	Geothermal	Wind	Solar
EU-27	8.7	6.0	1.6	0.3	0.7	0.1
Euro area	8.7	5.7	1.6	0.5	0.8	0.2
Belgium	3.6	3.4	0.0	0.0	0.1	0.0
Bulgaria	6.1	4.1	1.7	0.2	0.1	0.0
Czech Republic	5.4	4.9	0.5	0.0	0.1	0.0
Denmark	17.1	14.0	0.0	0.1	3.0	0.1
Germany	8.2	6.3	0.5	0.1	1.0	0.3
Estonia	11.8	11.4	0.0	0.0	0.3	0.0
Ireland	4.4	2.1	0.5	0.0	1.7	0.0
Greece	6.5	3.4	1.6	0.1	0.8	0.6
Spain	9.5	4.7	1.7	0.0	2.5	0.5
France	7.1	5.0	1.8	0.0	0.3	0.0
Italy	9.1	3.6	2.4	2.7	0.3	0.1
Cyprus	3.6	1.4	0.0	0.0	0.0	2.1
Latvia	34.5	27.9	6.5	0.0	0.1	0.0
Lithuania	15.3	14.5	0.5	0.1	0.2	0.0
Luxembourg	2.6	2.2	0.2	0.0	0.1	0.0
Hungary	7.1	6.5	0.1	0.4	0.1	0.0
Malta	0.0	-	-	-	-	-
Netherlands	3.6	3.1	0.0	0.0	0.5	0.0
Austria	25.6	14.5	10.2	0.1	0.5	0.4
Poland	6.2	5.9	0.2	0.0	0.1	0.0
Portugal	19.7	13.2	2.9	0.7	2.7	0.2
Romania	14.8	10.9	3.7	0.1	0.0	0.0
Slovenia	13.8	8.1	5.6	0.1	0.0	0.1
Slovakia	6.8	4.6	2.1	0.1	0.0	0.0
Finland	21.7	18.6	3.0	0.0	0.1	0.0
Sweden	30.8	19.3	11.0	0.0	0.4	0.0
United Kingdom	2.9	2.3	0.2	0.0	0.4	0.0
Norway	36.3	3.9	32.1	0.0	0.3	0.0
Switzerland	17.5	5.4	11.2	0.8	0.0	0.2
Croatia	11.1	4.2	6.8	0.0	0.1	0.1
Turkey	9.3	4.3	2.9	1.5	0.1	0.4

Source: Eurostat (online data codes: nrg_100a, nrg_1071a and nrg_1072a)

Fig. 2 - Proportion of electricity generated from renewable sources of 2010 (% of gross electricity consumption)

Source: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistics

In what concerns gross energy consumption, Portugal has, approximately, a 20 % share, mainly as a result of hydro (2,9%).and biomass (13,2%) So, 20% of the consumed gross energy comes from renewable sources.

If the goal towards sustainable energy procurement aims to increase the consumption of green electricity, we understand the consumers are the most important asset to take into account.

So, it is relevant to understand which are the drivers that influence consumers to adopt green tariffs. According to Ozaki (2011), consumers are likely to adopt green tariffs when:

Perceived Benefits - Consumers see benefits and positive consequences from adopting – what pushes people from intention to adopt and actual adoption;

Social Influence - Consumers feel enough social pressure or see many others adopt– needed to encourage adoption because environmental issues are seen and abstract and not immediate;

Perceived Compatibility - Consumers think that the service is compatible with their current practices and value, and with the identities and cultural references they like to express – personal and social identify are present on the adoption of green tariffs;

Controllability - Consumers think they can cope with the hassles associated with adopting and are willing to pay extra – adopting green tariffs can be seen as an inconvenience – requires time to fill a form, to contact the supplier, change payment settings, among other actions;

Perceived Uncertainty - Consumers do not perceive uncertainties and risks in terms of functionality and economics – consumers are uncertain if green electricity is really generated from renewable resources, if it is reliable. Other factors such as the contract nature and the costs can cause rejection. That is why it is needed to give information in order to consumers evaluate and make a wise decision.

By comparing and analyzing these factors, can we not question if, due to the economic crisis, we are living these days, if the price of the energy represents the most important driver of the consumers' choice?

4.2 A Liberalized Market – A New Framework to Portuguese Consumers

Since September 2006, all consumers in Portugal are able to choose their electricity supplier. This step represents an extension of the concept of liberalized market for a universe of about 6 million customers.

The liberalized market represents free competition in the electricity and gas, markets. It also allows the appearance of several energy traders and greater choice for consumers. It represents an opportunity: a changing in energy policies and a differentiation in the energy prices (the prices are different from supplier to supplier).

Although the new market represent some opportunities, it is important to define the components of the energy pricing calculation.

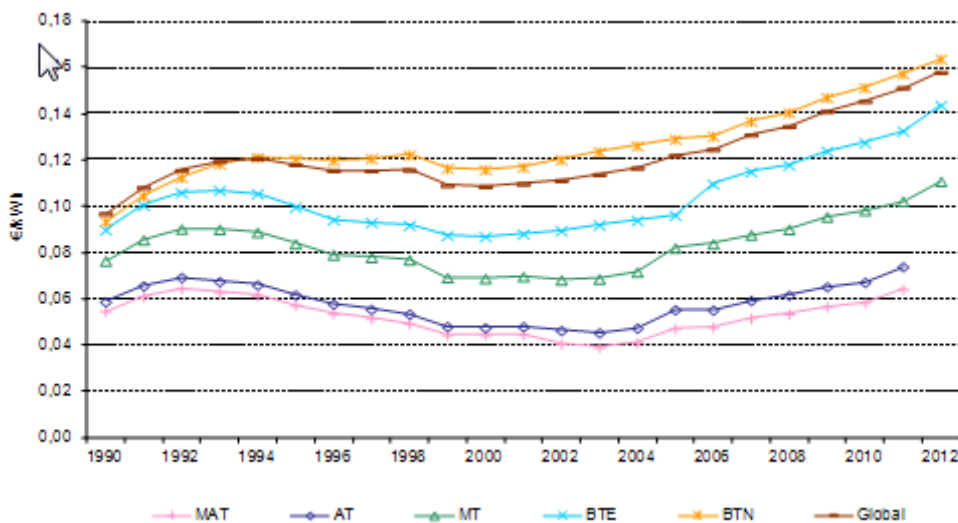


Fig. 3 – Evolution of Energy Prices in Portugal

Source: (ERSE, 2012)

CHAPTER 5.METHODS

Case study research is part of the disciplines of medicine and law and have long been important in the development of other fields such as anthropology, psychology, sociology, management, social work, and political science. Since a case study is an accepted research design in many disciplines, articles on methodology and actual case study reports do exist in journals and texts and considering that is scattered across so many so many fields of study, we consider it a good method t approach Green Procurement.

5.1 Scope

The GP Policy of each government has effects on the energy policy and consequently on its objectives to achieve by, not only but also, the activity of the private and public companies of the different countries.

Furthermore, the study is descriptive: it describes a category, its concepts and its variables by specifying its properties, characteristics and phenomena. It focuses on the description of how the European GP Policy will evolve between 2012 and 2020 and what could be the consequences for the Portuguese Energy Policy in order to explain the problem.

The data to collect belongs to the primary and secondary type. As method of primary data collection we have chosen an on-line survey¹².

According to Russ-Eft & Preskill (2001), there are several advantages in this kind of information collection tool:

- Administration is comparatively inexpensive and easy even when gathering data from large numbers of people spread over wide geographic area.
- Reduces chance of evaluator bias because the same questions are asked of all respondents
- Many people are familiar with surveys

¹² www.surveymonkey.com

- Some people feel more comfortable responding to a survey than participating in an interview
- Tabulation of closed-ended responses is an easy and straightforward process.

We considered the survey the most accurate since the queries are compliant with the objectives of the study and, at the same time, clarify them. We consider the sample representative since we have 508 respondents. We intend to assess how the Portuguese population access information in general and information about energy sustainability, in particular. We also want to assess if the Portuguese population is acquainted to the energy sustainability and GP areas:

- Regarding the economical opportunity, social responsibility, environment responsibility and competitive edge and innovation, how do the respondents classify in terms of importance the organizations' relation with the energy sustainability area;
- Considering GP, how familiar the respondents are to the theme and its concept and if they can write its definition;
- Appraise if the respondents know any research about GP;
- Assess, considering the 2020 scenery and in what concerns Government's energy supply services responsibilities, which are the most important energy sources to take into account.

We also chose the case study methodology: it is intended to observe phenomena in a real context and to present empirical data in order to answer the problem. The framework of this methodology is compliant with the theoretical framework, its aims and objectives. Thus, we assess if the energy market and its most relevant organizations consider the greener way to make purchases.

Regarding Pontes (1994):

A case study can be characterized as a well-defined study of a program, an institution, an educational system, a person or a social unit. Intends to know in depth the "how" and "whys" enhancing its own unity and identity. It is an investigation that is assumed as particularistic, it focuses on a specific situation

*that is supposed to be unique in many ways, on trying to find out what's in it of most essential and characteristic.*¹³

The secondary type data is based on a documentary research: on international and national statistics related to energy in order to define, understand and compare the calculation energy tariffs, specifically the renewable energy tariffs. There is also relevant information regarding UN's framework on GP and SD, the European GP framework (the European Committee Directives) which is the basis of the Portuguese Energy framework (the Council Ministers Resolutions and Law Decrees, and other available policy instruments). We think this kind of data is important.

Regarding Grigolo and Silva (2002):

*The documentary research is based on material that has not yet been submitted to any detailed analysis. This type of research requires the selection, process and interpretation of raw information with the aim of extracting aiming to introduce value. Thus, there is a contribution to the scientific community.*¹⁴

The main objective of the survey on Green Energy Procurement compare and clarify by the analysis of the current status of the Portuguese Population, concerning their information collection practices and choices, to assess if their concern and research goes beyond the basic, is the green concepts are present and represent a concern.

The Case Study method aims to identify the organizations' policies and activities in order to evaluate the environmental performance on energy GP, towards a greater social and environmental responsibility and therefore a greener development.

¹³ Translated by the author: "Um estudo de caso pode ser caracterizado como um estudo de uma entidade bem definida como um programa, uma instituição, um sistema educativo, uma pessoa ou uma unidade social. Visa conhecer em profundidade o seu "como" e os seus "porquês" evidenciando a sua unidade e identidade próprias. É uma investigação que se assume como particularista, isto é, debruça-se deliberadamente sobre uma situação específica que se supõe ser única em muitos aspectos, procurando descobrir o que há nela de mais essencial e característico."

¹⁴ Translated by the author: "A pesquisa documental baseia-se em materiais que ainda não receberam nenhuma análise aprofundada. Este tipo de pesquisa necessita de seleccionar, tratar e interpretar a informação bruta tendo como objectivo extrair de lá algo com sentido que lhe irá introduzir valor. Desta forma passará a contribuir para a comunidade científica."

Finally, we will proceed to the data processing by descriptive statistics: we propose to summarize and describe the main assets of data in order to answer the problem, the objectives of the study and therefore formulate the conclusions.

5.2 Questionnaire Data Analysis

The information collection tool was an on-line questionnaire published on Survey Monkey¹⁵. The sample size was of 508 respondents and the error associated to this sample size is 4,348%., considering a level of confidence of 95%.

After the data collection, and through SPSS, version 21.0, we have started the information analysis. Firstly, it was necessary to prepare the SPSS database, to define the variables, codify the variables and, finally, categorize the variables.

Variables definition

- | | |
|------------------------|--------------------------------|
| - Gender | - Conversation |
| - Age | - Journals |
| - Graduation | - Other |
| - -Residence | - Information collection about |
| - Internet | - Organizations and the energy |
| - Television | - GP Research |
| - Newspapers/Magazines | - Principal energy source |

¹⁵ <http://www.surveymonkey.com/s/WP7F5DX>

After defining variables and in order to create the excel file, the database, to import to the SPSS software, we had to codify the variables as follows:

Gender	Code
Feminine	1
Masculine	2
Age	Code
Up to 18	1
19-24	2
25-35	3
36-45	4
46-55	5
56-65	6
Above 66	7
Graduation	Code
9th grade	1
12th grade	2
Graduation	3
Post-graduation	4
Master degree	5
PhD degree	6
Does not answer	7
Residence	Code
North	1
South	2
Overseas	3
Information Collection_Internet	Code
Selected	1
Not Selected	2

Information Collection_Television	Code
Selected	1
Not Selected	2
Information Collection_Newspapers/Magazines	Code
Selected	1
Not Selected	2
Information Collection_Conversation	Code
Selected	1
Not Selected	2
Information Collection_Journals	Code
Selected	1
Not Selected	2
Information Collection_Other	Code
Selected	1
Not Selected	2
Information Collection about Energy Sustainability	Code
Yes	1
No	2
Does not answer	3
Organizations and the Energy Sustainability	Code
Not Important	1
Slightly Important	2
Important	3
Very Important	4
Not Applicable	5
Green Procurement Concept	Code
Yes	1
No	2
Does not answer	3

Principal Energy Source to Contract in 2020	Code
Not Important	1
Slightly Important	2
Important	3
Very Important	4
Not Applicable	5

Regarding the variable “Residence”, we divided it by three areas. Initially, we had the options “Lisbon”, “Porto” and “Other”, but after we analyze the data we perceive that some of the respondents were abroad and decided the best way to demonstrate their location was to classify them by North and South of Portugal and Overseas.

In what concerns the variable “Information Collection”, the query asks the respondents to indicate different ways of collecting information: internet, television, newspapers/magazines, conversation, journals and others. Consequently, the respondents could select more than one option and, because of that, we had to consider each option as a single variable and codify it like a binary variable, assuming that the value “1” corresponds to the option “the respondent selected” and the value “0” corresponds to the option “the respondent did not selected”.

When the database, considering the codification presented, was completed, we proceeded to the classification of the variables, made on the SPSS worksheet “variable view”, as follows:

Variable	Type	Measure
Gender	Qualitative - binary	Nominal
Age	Qualitative	Ordinal
Graduation	Qualitative	Ordinal
Residence	Qualitative	Nominal
Internet	Qualitative - binary	Nominal
Television	Qualitative - binary	Nominal
Newspapers/magazines	Qualitative - binary	Nominal
Conversation	Qualitative - binary	Nominal
Journals	Qualitative - binary	Nominal
Other	Qualitative - binary	Nominal
Information collection about Energy Sustainability	Qualitative	Nominal
Economical opportunity	Qualitative	Ordinal
Social Responsibility	Qualitative	Ordinal
Environment Responsibility	Qualitative	Ordinal
Competitive edge/Innovation	Qualitative	Ordinal
Green Procurement Concept	Qualitative	Nominal
Green Procurement Research	Qualitative	Nominal
Renewables: land based	Qualitative	Ordinal
Renewables: sea based	Qualitative	Ordinal
Nuclear	Qualitative	Ordinal
Natural Gas and Oil	Qualitative	Ordinal
Ecoefficiency	Qualitative	Ordinal
Lower Price	Qualitative	Ordinal

Table -1. Variables Classification

The variables are qualitative: they categorize but don't quantify. Seven of the variables are also binary: the gender and the ones related to information collection (internet, television, etc). We have also classified the variables by type considering each category: nominal and ordinal. The nominal variables represent categories that don't have a proper order and, consequently, the ordinal ones represent a determinate order, for example, the variable graduation (firstly, we have the 9th grade and finally the PhD degree) or the ones which, in order to categorize the variables by its importance, are represented by a 1 to 5 Likert scale¹⁶ (Not important, Slightly important, Important, Very important and Not Applicable).

We will proceed with the descriptive statistics, in order to understand, explain and meet the problem and objectives of the present study.

¹⁶ <http://www.socialresearchmethods.net/kb/scallik.php>

5.2 Characteristics of the Respondent

In this chapter we will define the respondents profile by analyzing their characteristics in what concerns gender, age, qualifications and place of living.

5.2.1. Gender

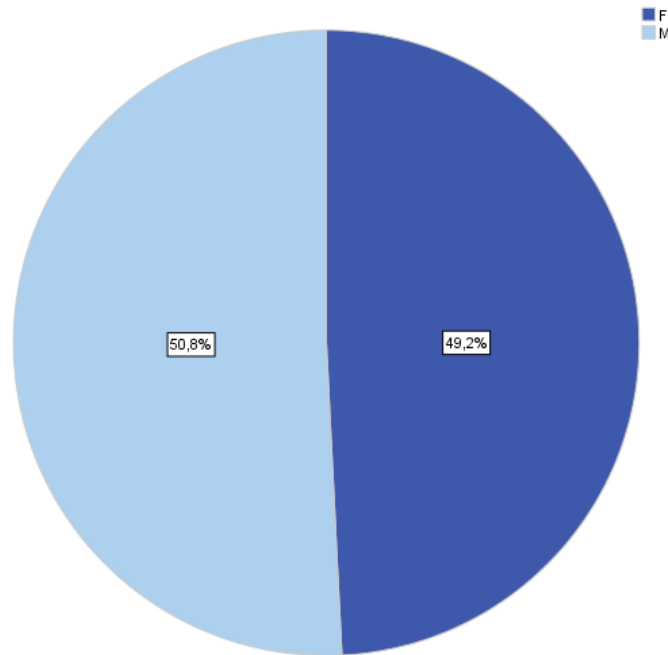


Fig. 4 - Gender

By analyzing the present pie chart, it is clear that the number of female respondents is similar to the number of male respondents. The female gender represents 49,2% of the respondents, which represents a total of 250 women out of 508 respondents.

5.2.2. Age

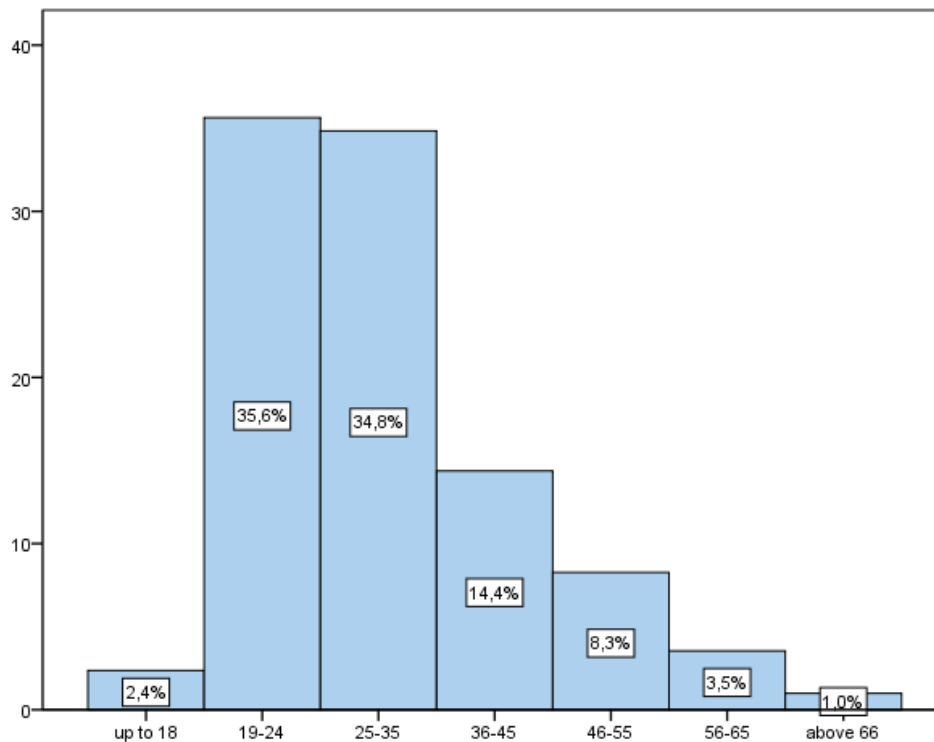


Fig. 5 - Age

As shown in graphic 2 we can assess the majority of the respondents, representing 72,8%, are young: ages between 19 and 35 years old. A total of 181 respondents, are between 19 and 24 years old and 177 respondents are between 25 and 35 years old. The remaining 150 respondents represent only 27,2% of the totality of the inquired

5.2.3. Graduation

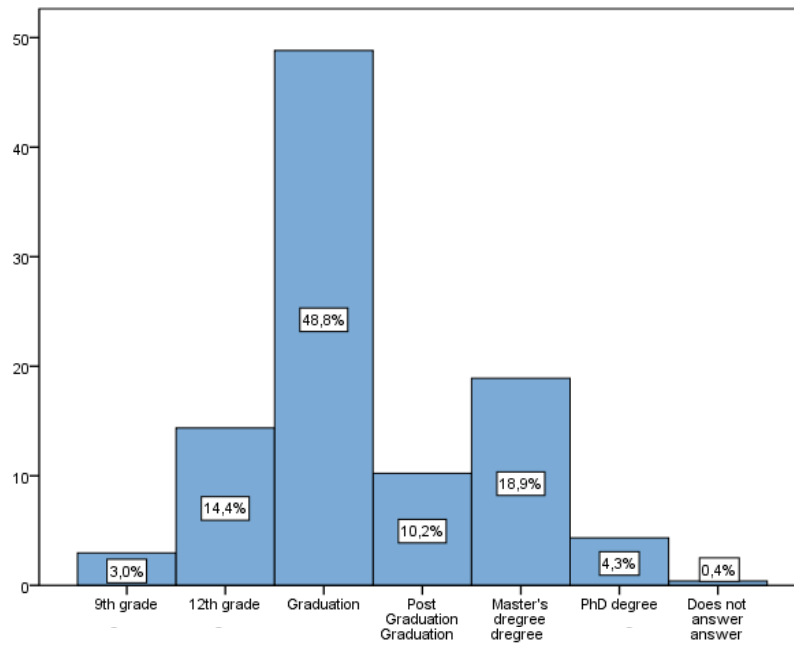


Fig. 6 - Graduation

We can see that most of the respondents have higher education. The present graphic shows that 82,2% of surveyed have, at least, graduation.

Secondly, 18,9 % of the respondents have the master's degree and 14,4% have the 12th grade. The remaining degrees represent only 17,9% of the inquires.

5.2.4. Residence

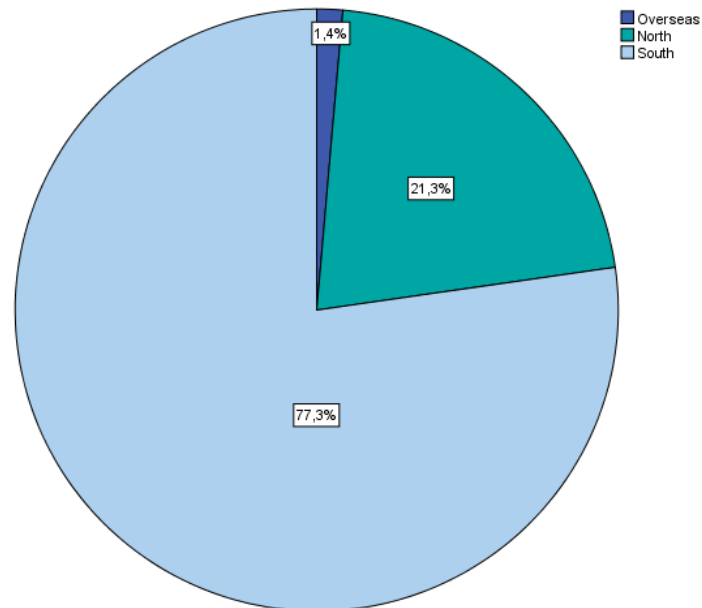


Fig. 7 - Residence

In what concerns the respondents' residence, we can see that most, 77,3%, live in the South of Portugal, mainly in Lisbon. On the other hand, 21,3% of the inquired live in the North of Portugal, mostly in Porto and Aveiro and 1,4% live overseas, namely in Cape Verde, England, Denmark, Angola and Australia.

5.3 Study Compliant Data Analysis - Univariate Analysis

5.3.1. Information Collection

	Frequency	Percentage
Internet	477	94,3%
Television	324	64,0%
Newspapers/Magazines	224	44,3%
Conversation	175	34,6%
Journals	83	16,4%
Other	7	1,4%
Answers	506	99,6%
Missing Answers	2	0,04%
Total	508	100%

Table - 2. Information Collection

In what concerns the information collection in general, it is clear that internet, followed by television and newspaper and magazines, are the ways that most of the inquired use to get information. As shown in table 2, 477 respondents out of 506 chose internet, 324 selected television and 224 surveyed chose newspapers and magazines.

Regarding, Conversation and Journals, 258 respondents selected these options.

Finally, the inquired (7 people) that chose the option “Other” listed the following tools of information collection: Radio, books, international fairs, technical books/manuals and papers.

5.3.2. Energy Sustainability Information Collection

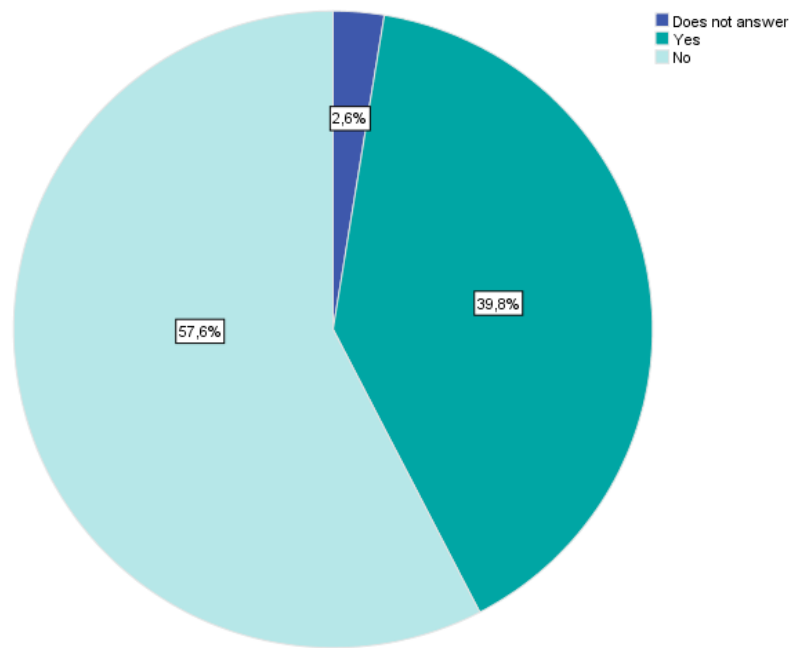


Fig. 8 – Energy Sustainability Information Collection

Concerning the information collection about Energy Sustainability, 57,6% of the respondents don't search information about this theme. On the other hand, 206 inquires are familiar and research information about energy sustainability in particular.

5.3.3. Organizations and the Energy Sustainability Concept

	Not Important	Slightly Important	Important	Very Important	N/A	Frequency
Economical Opportunity	0,2%	6,7%	33,9%	58,8%	0,4%	507
Social Responsibility	0,4%	8,3%	38,0%	53,1%	0,2%	505
Environment Responsibility	0,0%	5,3%	27,9%	66,3%	0,4%	505
Competitive Edge/Innovation	0,2%	3,8%	37,8%	57,9%	0,4%	503
Answers	507					
Missing Answers	1					
Total	508					

Table - 3 Organizations and the Energy Sustainability Concept

The respondents classified the economical opportunity, social and environment responsibility and the competitive edge/innovation of the organizations as important and very important. Although the answers present a similar pattern, the inquires classified the social responsibility the less important option and the environment responsibility the most important followed by the economical opportunity and the competitive edge/innovation.

5.3.4. Green Procurement Concept

	Frequency	Percentage
Yes	86	16,9%
No	390	76,8%
Does not Answer	30	5,9%
Answers	506	99,6%
Missing Answers	2	0,4%
Total	508	100%

Table - 4.Green Procurement Concept

In table 4 we can see that only 86 respondents (out of 506) know about the Green Procurement concept and 76,8% are not familiar with it.

5.3.5. Green Procurement Research

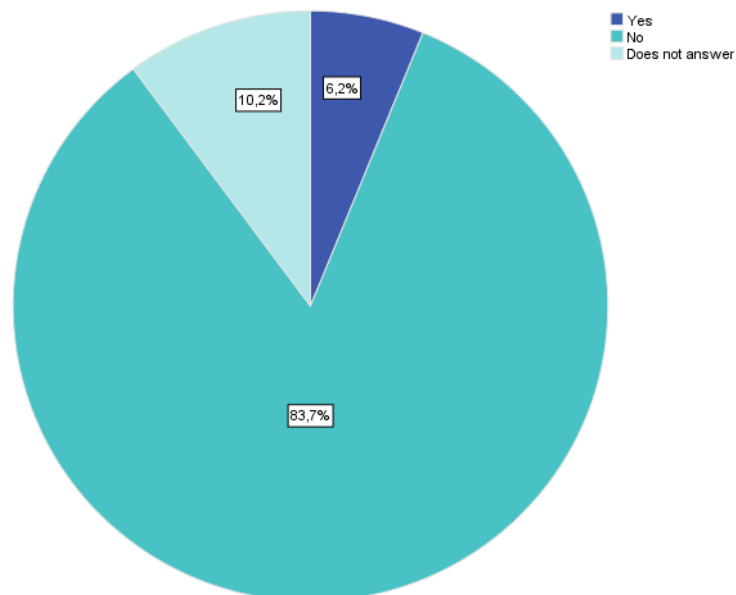


Fig. 9 – Green Procurement Research

Regarding Green Procurement Research, it is clear the most, 83,7%, of respondents don't know about any scientific works or research about Green Procurement. Furthermore, it is important to refer that only 31 inquires know about the theme of the present study research

5.3.6. Principal Energy Source to Contract in 2020

	Not Important	Slightly Important	Important	Very Important	N/A	Frequency
Renewables Land Based	0,2%	3,0%	37,1%	58,2%	1,4%	493
Renewables Sea Based	0,0%	5,0%	28,9%	64,7%	1,4%	484
Nuclear	31,4%	33,8%	22,0%	8,2%	4,6%	477
Natural Gas and Oil	13,9%	37,6%	35,3%	10,7%	2,5%	476
Ecoefficiency	5,6%	10,5%	39,4%	34,0%	10,5%	465
Lower Price	10,5%	22,1%	43,4%	13,8%	10,3%	458
Answers	504					
Missing Answers	4					
Total	508					

Table - 5.Principal Energy Source to Contract in 2020

The respondents classified the most important energy source are the energy from renewables with sea based (64,7%), followed by land based renewables and Ecoefficiency.

Although showing a different pattern, it is important to mention that 22% of the inquired consider the nuclear option as an important energy source.

Natural gas and oil and the lower price factor present the same model and the highest values in the “not applicable” option: more or less 10% of the inquires think these two options should not be considered in the energy services contract.

5.4 Study Compliant Data Analysis - Bivariate Analysis

5.4.1. Information Collection & Energy Sustainability Information Collection

5.4.1.1. Internet

		Internet		Total
		Not	Selected	
Energy Sustainability Information	Frequency	6	196	202
	Yes	% within Internet	41,2%	39,8%
		% of Total	38,7%	39,8%
	Frequency	25	267	292
	No	% within Internet	56,1%	57,6%
		% of Total	52,7%	57,6%
	Frequency	0	13	13
	Does not answer	% within Internet	2,7%	2,6%
		% of Total	2,6%	2,6%
Total	Frequency	31	476	507
	% within Internet	100%	100%	100%
	% of Total	6,1%	93,9%	100%

Table - 6 Energy Sustainability Information Collection & Internet

We can see that, overall, the inquires do not search or collect information about 'Energy Sustainability' (57,6%). It is clear that 56,1% of respondents which selected the option 'Internet' as a way of collecting information, do not research about 'Energy Sustainability' (a total of 267 out of 476). In the particular case of 'internet', this percentage should be higher since internet is, nowadays, the easiest way to collect information and the one that concentrates the most amount of data.

5.4.1.2. Newspapers/Magazines

		Newspapers/Magazines		Total
		Not	Selected	
Energy Sustainability Information	Yes	Frequency 108	94	202
	% within N/M	38,2%	42,0%	39,8%
	% of Total	21,3%	18,5%	39,8%
No	Frequency	171	121	292
	% within N/M	60,4%	54,0%	57,6%
	% of Total	33,7%	23,9%	57,6%
Does not answer	Frequency	4	9	13
	% within N/M	1,4%	4,0%	2,6%
	% of Total	0,8%	1,8%	2,6%
Total	Frequency	283	224	507
	% within N/M t	100%	100%	100%
	% of Total	55,8%	44,2%	100%

Table - 7. Energy Sustainability Information Collection & Newspapers/Magazines

Overall, we can see that 54% of respondents which selected the option ‘Newspapers’ and ‘Magazines’ as a way of collecting information, do not research about ‘Energy Sustainability’ (a total of 121 out of 224). However, 38,2% of the respondents that did not select this option, collect information about ‘Energy Sustainability’. Although not collecting this information in newspapers or magazines, this surveyed (108 people) are interested in the ‘Energy Sustainability’

5.4.1.3. Television

		Television		Total	
		Not	Selected		
Energy Sustainability Information	Frequency	80	122	202	
	Yes	% within TV	43,5%	37,8%	39,8%
		%of Total	15,8%	24,1%	39,8%
No	Frequency	101	191	292	
	% within TV	54,9%	59,1%	57,6%	
	%of Total	19,9%	37,7%	57,6%	
Does not answer	Frequency	3	10	13	
	% within TV	1,6%	3,1%	2,6%	
	%of Total	0,6%	2,0%	2,6%	
Total	Frequency	184	323	507	
	% within TV	100%	100%	100%	
	%of Total	36.3%	63.7%	100%	

Table - 8. Energy Sustainability Information Collection & Television

Despite selecting the option ‘Television’, the respondents, in general (59,1%). do not collect information about ‘Energy Sustainability’.

5.4.1.4. Conversation

		Conversation		Total
		Not	Selected	
Energy Sustainability Information	Frequency	125	77	202
	% within Conversation	37,5%	44,3%	39,8%
	%of Total	24,7%	15,2%	39,8%
Yes	Frequency	201	91	292
	% within Conversation	60,4%	52,3%	57,6%
	%of Total	39,6%	17,9%	57,6%
No	Frequency	7	6	13
	% within Conversation	2,1%	3,4%	2,6%
	%of Total	1,4%	1,2%	2,6%
Does not answer	Frequency	333	174	507
	% within Conversation	100%	100%	100%
	%of Total	65,7%	34,3%	100%
Total	Frequency	333	174	507
	% within Conversation	100%	100%	100%
	%of Total	65,7%	34,3%	100%

Table - 9. Energy Sustainability Information Collection & Conversation

On table 9, 52,3% of the inquires which selected conversation with familiars and friends, do not search about the ‘Energy Sustainability’ theme.

5.4.1.5. Journals

		Journals		Total
		Not	Selected	
Energy Sustainability Information	Frequency	146	56	202
	Yes % within Journals	34,4%	67,5%	39,8%
	%of Total	28,8%	11,0%	39,8%
No	Frequency	268	24	292
	% within Journals	63,2%	28,9%	57,6%
	%of Total	52,9%	4,7%	57,6%
Does not answer	Frequency	10	3	13
	% within Journals	2,4%	3,6%	2,6%
	%of Total	2,0%	0,6%	2,6%
Total	Frequency	424	83	507
	% within Journals	100%	100%	100%
	%of Total	83,6%	16,4%	100%

Table - 10. Energy Sustainability Information Collection & Journals

‘Journals’ are not the most popular way of collecting information among the respondents: only 16,4% selected this option. However, 56 out of 83 respondents (67,5%) search about ‘Energy Sustainability’.

On the other hand, 67,5% of the respondents that selected journals, collect information about ‘Energy Sustainability’. Comparing to the other options, ‘Journals’ are represented by a much higher percentage since this mean of communication focus mainly on scientific knowledge. Furthermore, ‘Energy Sustainability’ theme is a very recent theme.

5.4.1.6. Other

		Other		Total	
		Not	Selected		
Energy Sustainability Information	Frequency	199	3	202	
	Yes	% within Other	39,8%	42,9%	39,8%
	%of Total	39,3%	0,6%	39,8%	
No	Frequency	288	4	292	
	% within Other	57,6%	57,1%	57,6%	
	%of Total	56,8%	0,8%	57,6%	
Does not answer	Frequency	13	0	13	
	% within Other	2,6%	0,0%	2,6%	
	%of Total	2,6%	0,0%	2,6%	
Total	Frequency	500	7	507	
	% within Other	100%	100%	100%	
	%of Total	98,6%	1,4%	100%	

Table - 11 Energy Sustainability Information Collection & Other

We can see that 42,9% of the respondents that selected this option, research about the theme by listening to the radio, reading books, technical books/manuals and papers and, finally, by attending international events.

5.4.2. Energy Sustainability Information Collection & Green Procurement Concept

We mean to research if the people who research about ‘Energy Sustainability’, know about ‘Green Procurement Research’.

		GP Concept			Total
		Not Selected	Selected	Does not answer	
Energy Sustainability	Frequency	54	133	13	200
	Yes % within ES	27,0%	66,5%	6,5%	100%
	% of Total	10,7%	26,3%	2,6%	39,6%
No	Frequency	32	248	12	292
	% within ES	11,0%	84,9%	4,1%	100%
	% of Total	6,3%	49,1%	2,4%	57,8%
Does not answer	Frequency	0	8	5	13
	% within ES	0,0%	61,5%	38,5%	100%
	% of Total	0,0%	1,6%	1,0%	2,6%
Total	Frequency	86	389	30	505
	% within ES	17,0%	77,0%	5,9%	100%
	% of Total	17,0%	77,0%	5,9%	100%

Table - 12 Energy Sustainability Information Collection & GP Concept

By analyzing the present table, we intend to understand if the respondents that know about ‘Energy Sustainability’, are familiar with the ‘Green Procurement concept’. It is clear that this is not the case, only 27% of the inquires, in a total of 54 people, that procure information about ‘Energy Sustainability’ (86 respondents), are acquainted to the ‘Green Procurement concept’.

5.4.3. Energy Sustainability Information Collection & Green Procurement Research

We mean to research if the people who research about ‘Energy Sustainability’, know about ‘Green Procurement Research’.

		GP Research			Total
		Not Selected	Selected	Does not answer	
Energy Sustainability	Frequency	12	168	20	200
	Yes % within ES	6,0%	84,0%	10,0%	100%
	% of Total	2,4%	33,5%	4,0%	39,8%
No	Frequency	19	240	30	289
	% within ES	6,6%	83,0%	10,4%	100%
	% of Total	3,8%	47,8%	6,0%	57,6%
Does not answer	Frequency	0	12	1	13
	% within ES	0,0%	92,3%	7,5%	100%
	% of Total	0,0%	2,4%	0,2%	2,6%
Total	Frequency	31	420	51	502
	% within ES	6,2%	83,7%	10,2%	100%
	% of Total	6,2%	83,7%	10,2%	100%

Table - 13 Energy Sustainability Information Collection & GP Research

In general, the respondents do not know about any research about ‘Green Procurement’, 83,7% selected the option “No”. However, is interesting is the fact that 168 respondents, representing 84% of the inquires that collect information about ‘Energy Sustainability’, do not know about any ‘Green Procurement work’ or research. A considerable percentage of the respondents who research about ‘Energy Sustainability’ do not know

about any ‘Green Procurement study’. It would be expected the opposite because the study concerns a very current issue.

5.4.4. Energy Sustainability Information Collection & Principal Energy Source to Contract in 2020

We intend to understand if there is a connection between the respondents that collect information ‘Energy Sustainability’ and their importance classification of each energy source, of ‘ecoefficiency’ and of the ‘lower price’ option in a ‘Sustainable Development’ in the energy services landscape

Principal Energy Source	Not Important	Slightly Important	Important	Very Important	N/A	Total
Renewables Land based	0,0%	2,6%	39,8%	56,6%	1,0%	100%
Frequency	0	5	78	111	2	196
Renewables Sea based	0,0%	6,8%	30,7%	61,5%	1,0%	100%
Frequency	0	13	59	118	2	192
Nuclear	40,9%	32,6%	15,0%	7,8%	3,6%	100%
Frequency	79	63	29	15	7	193
Natural Gas and Oil	18,7%	40,4%	30,6%	8,8%	1,6%	100%
Frequency	36	78	59	17	3	193
Ecoefficiency	7,6%	10,8%	35,1%	36,2%	10,3%	100%
Frequency	14	20	65	67	19	185
Lower Price	13,7%	24,2%	39,6%	8,8%	13,7%	100%
Frequency	25	44	72	16	25	182

Table - 14 ES Information Collection & Principal Energy Source in 2020

Concerning the energy which comes from ‘renewables, land and sea based’, 99% the respondents that collect information about ‘Energy Sustainability’ consider it, at least, ‘very important’.

As shown in table 14, 73,5% of the respondents that know about ‘Energy Sustainability’, believe that, as an energy source, ‘Nuclear’ is, at most, ‘slightly important’, respectively. Though, it is important to mention that 15% consider nuclear as an important source of energy within the Portuguese Government’s sustainable scenery of 2020.

As we can see in table 14, 40,4% of the respondents that collect information about ‘Energy Sustainability’, classify the ‘Natural Gas and Oil’ as a ‘slightly important’ energy source.

In what concerns ecoefficiency, 71,3% of the surveyed that are acquainted to ‘Energy Sustainability’ information, consider it, at least, ‘important’ and ‘very important’.

Finally, 39,6% of the respondents familiar to ‘Energy Sustainability’ information, classified the ‘lower price’ factor as ‘important’.

5.4.5. Energy Sustainability Information Collection & Organizations and Energy Sustainability Concept

We aim to understand if there is a relationship between the respondents that collect information ‘Energy Sustainability’ and their importance classification between the organizations and the ‘Energy sustainability concept’: in what concerns ‘economical opportunity’, ‘social and environment responsibility’ and the ‘competitive edge/innovation’.

ES Concept	Not Important	Slightly Important	Important	Very Important	N/A	Total
Economical Opportunity	0,0%	4,5%	27,7%	67,8%	0,0%	100%
Frequency	0	9	56	137	0	202
Social Responsibility	0,0%	10,9%	36,3%	52,7%	0,0%	100%
Frequency	0	22	73	106	0	201
Environment Responsibility	0,0%	6,0%	26,9%	67,2%	0,0%	100%
Frequency	0	12	54	135	0	201
Competitive Edge/Innovation	0,0%	3,0%	30,2%	66,3%	0,5%	100%
Frequency	0	6	60	132	1	199

Table - 15 ES Information Collection & Organizations and ES

We can see 95,5% of the respondents that collect information about ‘Energy Sustainability’, consider the ‘economical opportunity’ to organizations as, at least, an ‘important’ factor in what concerns their connection to the ‘Energy Sustainability concept’.

In what concerns 'social responsibility', 89% of the inquires, familiar with the 'Energy Sustainability' information, classified it as an 'important' or 'very important' option in the relationship between organizations and the 'Energy Sustainability concept'.

Regarding 'environment responsibility', 94% of the respondents that selected "yes" in the 'Energy Sustainability' information collection question, considered as, minimally, an 'important' asset in the association of the organization to the 'Energy Sustainability concept'.

Finally, 3% of the respondents, well-informed about 'Energy Sustainability', consider competitive edge and innovation as, at most, 'slightly important', regarding organizations and the energy sustainability concept.

We can also observe that the respondents classified all of the options: 'economical opportunity', 'social responsibility', 'environment responsibility' and 'competitive edge and innovation' as 'very important'

5.4.6. Green Procurement Concept & Green Procurement Research

		GP Research			Total
		Not Selected	Selected	Does not answer	
Green Procurement	Frequency	5	74	7	86
	Yes % within GP	5,8%	86,0%	8,1%	100%
	% of Total	1,0%	14,8%	1,4%	17,2%
No	Frequency	25	321	40	386
	% within GP	6,5%	83,2%	10,4%	100%
	% of Total	5,0%	64,1%	8,0%	77,0%
Does not answer	Frequency	1	24	4	29
	% within GP	3,4%	82,8%	13,8%	100%
	% of Total	0,2%	4,8%	0,8%	5,8%
Total	Frequency	31	419	51	501
	% within GP	6,2%	83,6%	10,2%	100%
	% of Total	6,2%	83,6%	10,2%	100%

Table - 16 GP Concept & GP Research

By analyzing table 16, we can see that 86% that selected “yes” in the ‘Green Procurement concept’ question are not familiar with any ‘Green Procurement Research’. In conclusion, majority of the respondents do not know any studies about it, which makes this study a plus to the scientific knowledge.

5.4.7. Green Procurement Concept & Principal Energy Source to Contract in 2020

We intend to comprehend if there is a relationship between the respondents that are familiar with the ‘Green Procurement concept’ and their importance classification of each energy source, of ‘ecoefficiency’ and of the ‘lower price’ option in a Sustainable Development in the energy services scenery.

Principal Energy Source	Not Important	Slightly Important	Important	Very Important	N/A	Total
Renewables Land based	0,0%	2,4%	36,6%	61,0%	0,0%	100%
Frequency	0	2	30	50	0	82
Renewables Sea based	0,0%	7,6%	25,3%	67,1%	0,0%	100%
Frequency	0	6	20	53	0	79
Nuclear	38,5%	29,5%	15,4%	10,3%	6,4%	100%
Frequency	30	23	12	8	5	78
Natural Gas and Oil	12,8%	38,5%	34,6%	14,1%	0,0%	100%
Frequency	10	30	27	11	0	78
Ecoefficiency	5,3%	10,5%	34,2%	42,1%	7,9%	100%
Frequency	4	8	26	32	6	76
Lower Price	14,7%	20,0%	38,7%	14,7%	12,0%	100%
Frequency	11	15	29	11	9	75

Table - 17 GP Concept & Principal Energy Source in 2020

We can see that most (97,6%) of the respondents that know the ‘Green Procurement concept’ e consider the ‘renewables, land based,’ as, at least, an ‘important’ energy source.

A total of 53 people, representing 67,1% of surveyed familiar with the 'Green Procurement concept', classified as 'very important' the energy from renewables sea based.

As shown in table 17, 68% of the respondents that know about 'Green Procurement concept', believe that, as an energy source, 'Nuclear' is, at most, 'slightly important'. However, it is important to mention that 15,4% consider 'Nuclear' as an 'important' source of energy within the Portuguese Government's sustainable scenery of 2020 in what concerns the energy services.

Within the 2020 landscape in what concerns sustainable energy services, 85,9% of the respondents acquainted to 'Green Procurement concept', consider 'Natural Gas and Oil' as, at most, an important energy source.

'Ecoefficiency', for 76,3% of the respondents familiar with 'Green Procurement concept', is, at least, an 'important' factor in the 2020 sustainable scenery, regarding energy services.

Finally, 73,4% of the respondents which know about 'Green Procurement concept', classified the 'lower price' as, minimally, a 'slightly important' part of Portuguese Government's energy services outlook in 2020.

5.4.8. Age & Green Procurement Concept

		Age							Total
		<18	19-24	25-35	36-45	46-55	56-65	>66	
GP Yes	Frequency	0	19	29	17	12	7	2	86
	% within GP	0,0%	22,1%	33,7%	19,8%	14,0%	8,1%	2,3%	100%
	%of Total	0,0%	3,8%	5,7%	3,4%	2,4%	1,4%	0,4%	17,0%
No	Frequency	12	145	140	52	30	9	2	390
	% within GP	3,1%	37,2%	35,9%	13,3%	7,7%	2,3%	0,5%	100%
	%of Total	2,4%	28,7%	27,7%	10,3%	5,9%	1,8%	0,4%	77,1%
Does not answer	Frequency	0	17	7	4	0	2	0	30
	% within GP	0,0%	56,7%	23,3%	13,3%	0,0%	6,7%	0,0%	100%
	%of Total	0,0%	3,4%	1,4%	0,8%	0,0%	0,4%	0,0%	5,9%
Total	Frequency	12	181	176	73	42	18	4	506
	% within GP	2,4%	35,8%	34,8%	14,4%	8,3%	3,6%	0,8%	100%
	%of Total	2,4%	35,8%	34,8%	14,4%	8,3%	3,6%	0,8%	100%

Table - 18 Age & GP Concept

Although there is only 86 respondents familiar with the ‘Green Procurement concept’, we can identify 33,7% of them are between 25 and 35 years old. It is also clear that there is no inquires under 18 years old acquainted to the concept

5.4.9. Age & Green Procurement Research

		Age							Total
		<18	19-24	25-35	36-45	46-55	56-65	>66	
GP Yes	Frequency	0	14	8	4	3	2	0	31
	% within GP	0,0%	45,2%	25,8%	12,9%	9,7%	6,5%	0,0%	100%
	%of Total	0,0%	2,8%	1,6%	0,8%	0,6%	0,4%	0,0%	6,2%
No	Frequency	10	148	147	61	35	16	4	421
	% within GP	2,4%	35,2%	34,9%	14,5%	8,3%	3,8%	1,0%	100%
	%of Total	2,0%	29,4%	29,2%	12,1%	7,0%	3,2%	0,8%	83,7%
Does not answer	Frequency	2	17	21	7	3	0	1	51
	% within GP	3,9%	33,3%	41,2%	13,7%	5,9%	0,0%	2,0%	100%
	%of Total	0,4%	3,4%	4,2%	1,4%	0,6%	0,0%	0,2%	10,1%
Total	Frequency	12	179	176	72	41	18	5	503
	% within GP	2,4%	35,6%	35,0%	14,3%	8,2%	3,6%	1,0%	100%
	%of Total	2,4%	35,6%	35,0%	14,3%	8,2%	3,6%	1,0%	100%

Table - 19 Age & GP Research

In what concerns the awareness of ‘Green Procurement research’, the respondents between 19 and 24 years old are the majority in both options: 45,2% selected “yes” and 35,2% selected “no”. It is important to point out the fact that we did not verify any respondents under 18 years old acquainted to any ‘Green Procurement study’.

5.4.10. Gender & Green Procurement Concept

		Gender		Total
		Not Selected	Selected	
Green Procurement	Frequency	48	37	85
	% within GP	56,5%	43,5%	100%
	% within Gender	19,3%	14,5%	16,8%
	% of Total	9,5%	7,3%	16,8%
No	Frequency	179	211	390
	% within GP	45,9%	54,1%	100%
	% within Gender	71,9%	82,4%	77,2%
	% of Total	35,4%	41,8%	77,2%
Does not answer	Frequency	22	8	30
	% within GP	73,3%	26,7%	100%
	% within Gender	8,8%	3,1%	5,9%
	% of Total	4,4%	1,6%	5,9%
Total	Frequency	249	256	505
	% within GP	49,3%	50,7%	100%
	% within Gender	100%	100%	100%
	% of Total	49,3%	50,7%	100%

Table - 20 Gender & GP Concept

In what concerns the respondents' gender and the familiarity with the 'Green Procurement concept', there is a similar pattern between the males and females which are acquainted to the concept and the ones who are not: 56,5% female and 43,5% male respondents selected "yes", respectively. The respondents which chose "no" represent 45,9% female and 54,1% male. In what concerns 'Green Procurement concept', gender is not a differentiation factor.

5.4.11. Gender & Principal Energy Source to Contract in 2020

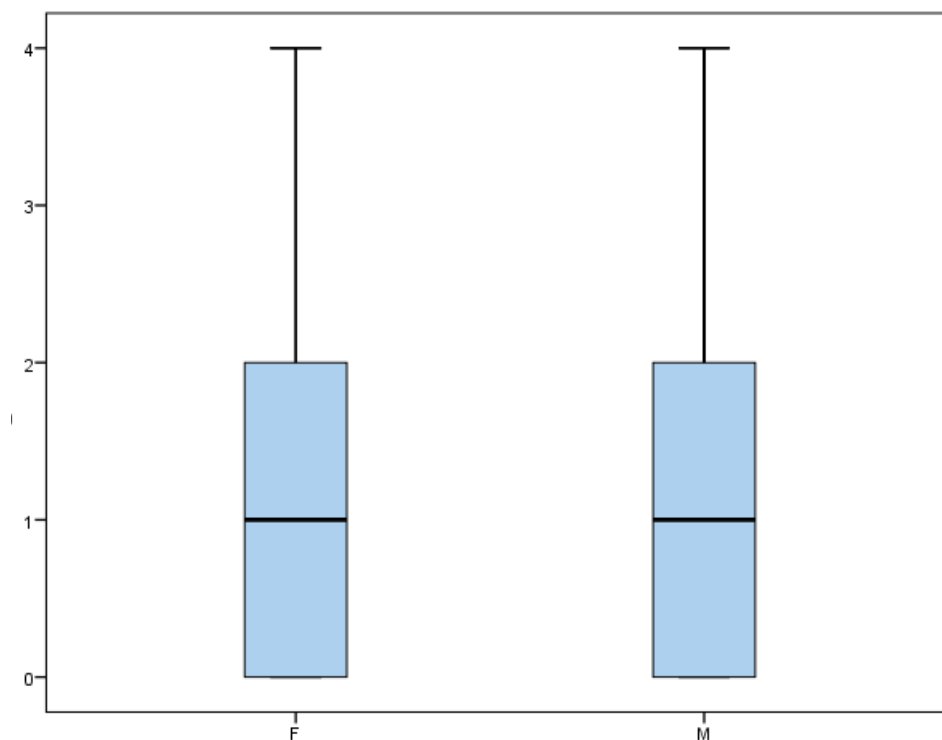


Fig. 10 – Gender & Nuclear

Regarding 'Nuclear', the distribution of female and male respondents is similar, both female and male inquires considered the nuclear as not important, 'slightly important' and 'very important'.

In what concerns the rest of the energy sources from 'renewables earth and sea based', from 'natural gas and oil', 'ecoefficiency' and the 'lower price' factor, both genders classified it with the same pattern as 'important' and 'very important'.

5.4.12. Residence & Green Procurement Concept

		Residence			Total
		Not Selected	Selected	Does not answer	
Green Procurement	Frequency	67	17	2	86
	% within GP	77,9%	19,8%	2,3%	100%
	% within Residence	17,2%	15,7%	28,6%	17,1%
	% of Total	13,3%	3,4%	0,4%	17,1%
No	Frequency	306	78	4	388
	% within GP	78,9%	20,1%	1,0%	100%
	% within Residence	78,7%	72,2%	57,1%	77,0%
	% of Total	60,7%	15,5%	0,8%	77,0%
Does not answer	Frequency	16	13	1	30
	% within GP	53,3%	43,3%	3,3%	100%
	% within Residence	4,1%	12,0%	14,3%	6,0%
	% of Total	3,2%	2,6%	0,2%	6,0%
Total	Frequency	389	108	7	504
	% within GP	77,2%	21,4%	1,4%	100%
	% within Residence	100%	100%	100%	100%
	% of Total	77,2%	21,4%	1,4%	100%

Table - 21 Residence & GP Concept

The respondents that know about the ‘Green Procurement concept’ are, mostly, from the South of Portugal, representing 77,9% of the 86 that selected “yes”.

5.4.5. Study Analysis Summary

5.4.5.1. Respondents’ Profile

Portuguese young male or female, between 19 and 35 years old, graduated and lives in Lisbon.



Gender: Male/Female

Age: between 19 and 35 years old

Graduation: Graduation degree

Residence: South of Portugal (Lisbon)

5.4.5.2. Univariate Analysis Summary

Trough the univariate analysis, we can perceive the following:

- ‘Internet’ is the way most respondents’ collect information, in general, followed by ‘television’, ‘newspapers and magazines’ and, finally ‘other’.
- Most of surveyed don’t research about ‘Energy Sustainability’.
- Regarding the relationship between organizations and the ‘Energy Sustainability’ concept, the inquires classified ‘social responsibility’ the less important option and the ‘environment responsibility’ the most important.
- Most of respondents are not acquainted to the ‘Green Procurement’ Concept.

- Concerning the principal energy source to contract in energy services, the inquires classified 'sea based Renewables' the most energy source and 'nuclear' the less important one.

5.4.5.3. Bivariate Analysis Summary

Trough the bivariate analysis, we can observe the following:

- Overall, the respondents don't collect 'Energy Sustainability' information by internet, newspapers, magazines, television, conversation and journals.
- Considering that compared with radio, television or newspapers internet is the mean of communication that most of respondents selected and the one that concentrates more information, a higher percentage of surveyed should be aware and research about the Energy Sustainability theme.
- The option "Journals" represent the highest percentage in what concerns Energy Sustainability information collection, We can perceive that, along with other scientific knowledge, this theme is discussed and approached in this way of communication.
- The respondents which selected the option other (42,9%), collect information about 'Energy Sustainability' on radio, books, technical books/manuals, papers and international events.
- Although collecting information about 'Energy Sustainability', the respondents are not familiar with the 'Green Procurement Concept'. In this case, the respondents should be acquainted with the theme of the study since they selected the option "yes" regarding the Energy Sustainability information collection. The

study represents a theme which should be present in the people's nowadays concerns.

- A considerable percentage of the respondents who research about 'Energy Sustainability' don't know about any 'Green Procurement document'. We hope that the present study may be a valid contribution to the scientific knowledge.
- In general, the respondents acquainted to the 'Energy Sustainability' consider, in a 2020 Portuguese Government Sustainable Development landscape:
 - 'Renewables, land and sea based', and 'ecoefficiency': 'very important';
 - 'Lower price' factor: 'important';
 - 'Nuclear': mostly considered as not important, although there is a percentage of respondents which classify it as important.
- Regarding its connection to organizations' 'economical opportunity', 'social and environment responsibility' and 'competitive edge and innovation', the respondents, familiar to 'Energy Sustainability', consider all of the options mentioned as 'very important'.
- The majority of inquires that are aware of 'Green Procurement concept'; don't know about 'Green Procurement Research'.
- The respondents acquainted to the 'Green Procurement concept' consider, in a 2020 Portuguese Government Sustainable Development scenery:
 - 'Renewables, from land and sea based': 'very important';
 - 'Ecoefficiency' and 'lower price': 'important';
 - 'Natural Gas and Oil': 'slightly important';
 - 'Nuclear': mostly considered as 'not important', although there is a percentage of respondents which classify it as 'important'.
- Most of the respondents know 'Green Procurement concept', they are between 25 and 35 years old.

- Most of the respondents that know and don't know 'Green Procurement concept' are, in both cases, between 19 and 24 years old.
-
- In what concerns 'Green Procurement concept', gender is not a differentiate factor.
- Considering gender, the respondents classified the following:
- Similar pattern:
 - 'Renewables land and sea based' and 'ecoefficiency': 'Important' and 'very important';
 - 'Nuclear': 'not important' and 'slightly important'.
- The region where respondents are mostly aware of 'Green Procurement concept' is the 'South' of Portugal.

5.4.5.4. Green Procurement Concept - Analysis Summary – Open Question

A More Sustainable World

The inquiries associate environmental criteria and sustainable development objectives (the majority of responses)

First idea - Personal options to purchase:

- Procurement recycled products
- Procurement of products with less polluting or low energy
- Respondents' examples: Procurement of products which have cost / environmental performance concern .IKEA, paid bags at the supermarket, local products, long-lasting products, eco-labels

Second idea - Concept of Procurement Policy

- Procurement policies, which focus on environmental and ecological issues - environmental sustainability and energy as a criteria in the selection of suppliers or products.
- Procurement policies which focus on sustainable production processes - less waste and less impact on natural resources - the concept of "the waste in excess".

A more sustainable World and Economy:

Respondents associate concept of economic (and social) sustainability and the production/sales processes and product life cycle concerns.

- Matchup between economic and environmental development - relevance of the sustainable development concept. Focus on the product life cycle, concerning the pollutant load, energy and natural resources consumption. (low number of responses)
- Special attention to social and environmental impacts throughout the product life cycle - buying goods or services with low environmental impact, which have been produced under the same conditions: equal opportunities to all chain parties (production, transport, marketing), taking into account social issues (like working hours, wages,) (4 responses)

CHAPTER 6. CONCLUSIONS

Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning.

Albert Einstein

Our world is suffering an environmental crisis, for a long time. Today we watch biodiversity loss, ecosystem failure, waste accumulation, climate change, financial volatility, fossil fuels dependence, among other phenomena: world population will face the challenge of living within the limits of the Planet. The limits are not new, but now, as a product of our abuse, we are more aware of them. At least, we should.

A global joint action is imperative, with a SD mindset towards a changing world.

Sustainability emerges as a central concept, by crossing social, economical and environmental fields.

Nations and Government must have a development approach which goes beyond the singular notion of pure economic resource-transformation based growth. Social and environmental responsibility must be clearly present in the policies of each country. As stated in the second principle of thermodynamics, in an isolated system, when transformation in prime grade energy and matter continuously occurs, entropy can only increase. And increased it did. This brings us to the current need to preserve primary sources of energy and slow the intensity of energy degradation cycles. Also, we need to decouple economic growth from the increasing usage of fossil fuels and explore trends in sustainable energy production and consumption.

Being part of the economic global ecosystem, all organizations should pursue the ideal of SD and GP can be a simple and practical way to start achieving it: we need a holistic action focused on sustainable forms of production and consumption.

GP makes good economic sense for both consumers and companies. On the one hand consumers, more aware and affected by nowadays environmental uncertainty, by applying the principles of reduction, reutilization and recycling, can be the driver that pushes savings and a conscious decision of being socially and environmentally responsible. On the other hand, when business implement GP practices are also adding value to the supply chain. So, the connection between SD and economic development is a good reason for a GP.

So, what can be done towards a safer future? What can consumers and organizations do?

Procurement policies which focus on sustainable production processes - less waste, less energy consumption and less impact on natural resources.

These issues have to take into account in the various stages of the production process: production, distribution, etc.

Focus on the environmental consequences, in the production/sales processes different stages of the product life cycle.

Carter et al. (1998, in Salam, 2008), defined that the GP policy is related to how the organization supply, considering reduction, reuse and recycling of materials in the purchase process: if an organization holds a GPP, it is required a GSCM.

Purchase goods or services with low environmental impact, produced under the same social conditions.

According to, Goodland & Daly (1996) argue that it is achieved by systematic citizen participation in community. Thus, to achieve a social sustainability stage, it is necessary

to keep “moral capital” and made up value and equal rights. For example, working hours, wages.

Consumers’ procurement of products which with good environmental performance. For example: recycle products, local products, long-lasting products, eco-labeled products or products with energy certification.

Organizations must implement sustainable initiatives which promote GP. For example paid bags.

However, GP concept is not so present nowadays. Overall, people are not acquainted to the GP concept which, unfortunately, puts a greener landscape further away.

It is really concerning as we perceived that Internet was the way most individuals collect information. Compared to other means of communication, *internet makes a vast amount of information available, from a plurality of information sources, and makes it continuously available, more or less independent of time and place.*¹⁷

The percentage of people researching about GP should be higher since internet makes information available to a large audience.

*Dissemination of information is a two way process*¹⁸. It allows expression and discussion of points of view, voicing opinions and, most importantly, inform and influence others.

So, how can consumers and companies, make environmental friendly purchase choices if they don’t know about GP principles, issues and concerns?

¹⁷ In [http:// www.studymode.com](http://www.studymode.com)

¹⁸ [http:// www.studymode.com](http://www.studymode.com)

This is explained by the lack of information available to society. Furthermore, the documents are very complex. In fact, there are only Government policies (Law Decrees, for example), community (EU) policies or UN policies, which language is very specific and hard for most people to understand.

Therefore, we conclude that a variety of deliverables about GP should be available, namely: handbooks, action plans, guideline books, brochures and flyers. So, the language should be accessible and the documents should be free and integrate indicators, information, guidelines, challenges, policies, considerations, practices, in order to introduce these concerns in peoples' interests.

In our opinion, organizations, in order to promote green purchasing to the society, should have a Green Marketing approach: "green marketing gradually increase the forces again with the constant ascend of growing global concern about the environmental quality"¹⁹.

In conclusion, Governments must develop policies that promote GPP, in order to organizations implement green purchasing practices and consumers aware and do the right choices. They have a reciprocal relationship and responsibility, towards a social, economical and environmental sustainable world.

Energy is one of the major issues to achieve SD: it contributes to the economic development but also to the degradation of the environment. Therefore, it is clear that the growth of renewables is a must have in a sustainable economy. However, in what concerns green energy procurement there is a lack of awareness, regulations and financing.

¹⁹ <http://www.ukessays.com/>

Unfortunately, Portugal is no different than the rest of the Europe. According to the Portuguese Energy Policy objectives, by 2020, 31% of the final energy consumption must be from renewable sources.

Portuguese people are acquainted to this goals:

Through data analysis, we perceived that individuals consider renewables, land and sea based, as very important. This is comprehensive since renewable energy represents an important role in nowadays world:

The United Nations General Assembly declared 2012 as the International Year of Sustainable Energy for All. UN Secretary-General Ban Ki-moon has supported the Year with his new global initiative, Sustainable Energy for All, which seeks to mobilise action on three interlinked objectives to be achieved by 2030: providing universal access to modern energy services, doubling the rate of improvement in energy efficiency, and doubling the share of renewable energy in the global energy mix (P.7). (Renewables Global Status Report, 2012)

We consider it as a positive way of thinking, towards a greener, sustainable view and prospect. However, there is a concerning issue: nuclear. In the questionnaire, 15% of the respondents consider nuclear as an important energy source.

As we can see in the present figure (Renewables Global Status Report, 2012), fossil fuels and nuclear still represent 74, 7% share in the global electricity production in 2011.

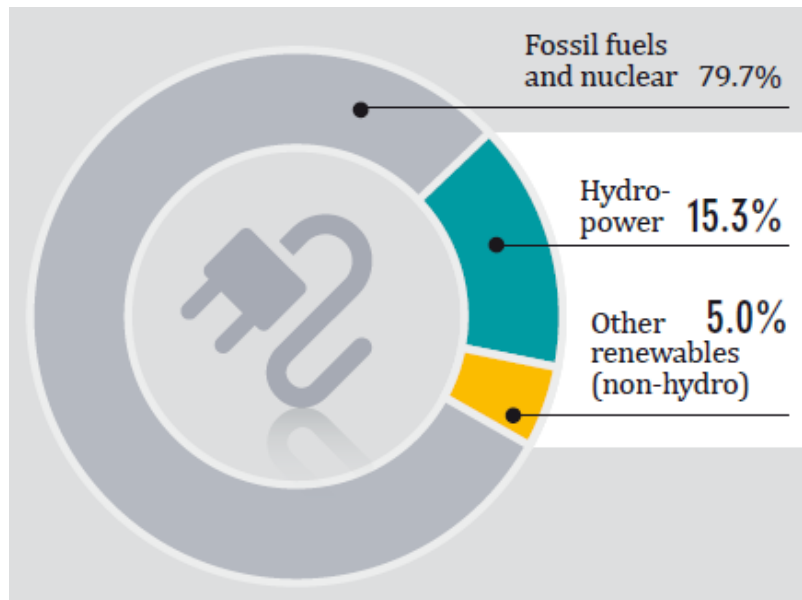


Fig. 11 – Estimated Renewable Energy Share of Global Electricity Production in 2011

Source: Renewables Global (BP, 2013)Status Report, 2012 (P.23)

This is a concerning issue considering that nuclear has disadvantages, such as: proliferation concerns, highly dangerous and decade lasting radioactive waste ; risk of contamination; safety of nuclear power plants employees; health safety and the fact that uranium is not a renewable source neither (sufficiently) available at the national territory.

We consider these facts as sufficient enough to believe nuclear as an extreme risk choice: if people were aware of these aspects, maybe wouldn't state so promptly that this is an important energy source.

In our opinion, 'Lower Price' is the number one driver in the adoption of green tariffs. Portuguese people consider it as an important factor. Nowadays, we are leaving in a economic crisis and drivers such as pricing and perceived uncertainty can influence

whether consumers adopt, or not, green tariffs. If consumers are not sure if the green energy is reliable (if it comes really from renewable resources), if they don't know the contract nature and its costs, they might reject green tariffs. People must be aware and well informed in order to evaluate and make a wise decision of the contract of energy services. The decision, actually, became more difficult, when the energy market became liberalized. It was aiming the decrease of energy prices because of the increased number of companies on the market (not only EDP), which in turn did not happen.

Overall, Portuguese Government promotes its Energy Policy within a SD, framework, but the economical and social frameworks are very important factors that define the increase of Renewable Energy Procurement. Although, there are subsidies and incentives publications, the energy prices are rising over the years and in the current financial crisis acute scenario, the Portuguese cannot afford not betting in GPP as a strategy for a sustainable economic recovery.

There is hope; the whole is made out of the synergistic relations between the parties and no phenomenon can occur without previous conditions and further consequences. That is why GPP initiatives are important to be the parties of a big stream called a Sustainable Economy.

CHAPTER 7 FUTURE CONSIDERATIONS

Let the future tell the truth, and evaluate each one according to his work and accomplishments. The present is theirs; the future, for which I have really worked, is mine.

Nikola Tesla

The study developed in this thesis aims to identify the current policies of environmental procurement policies in the UN, EU and in Portugal and, consequently, in both public and private institutions, considering two vectors: the GP Policy and SD.

The present debate around this subject and the lack of a considerable body of evidence regarding scientific publications about the societal and environmental effects of green procurement policies, especially in the field of energy procurement, suggests that there is a need for further research.

It was intended to describe and understand the status of Green Procurement, the strategy towards a greener future, to analyze people's behavior and choices and institutions activity in order to define alternatives to the existing strategies, plans and instruments.

We considered the questionnaire an adequate method to assess these issues, regardless its limitations. In future research, it is strongly advised to design a strategy for further exposing the questionnaire, using social media more intensively for instance.

Although the respondents were somehow familiar with Green Procurement and its application, we advise on further effort regarding public campaigns and awareness raising regarding this subject.

Regarding sustainability, this has to be part of an organization and a response-based strategy towards the trends of individuals/consumers concern. Therefore, we suggest a focus on the development of strategies that promote and widespread not only in the relationships between organizations and stakeholders (using the value chain approach), but also concerning conscious consumers' choices.

Considering Sustainable Development, there is a prospect of a clean energy future, the research on Green Energy Procurement has a major importance and a great potential (Fig 12):

Growing Power Demand...

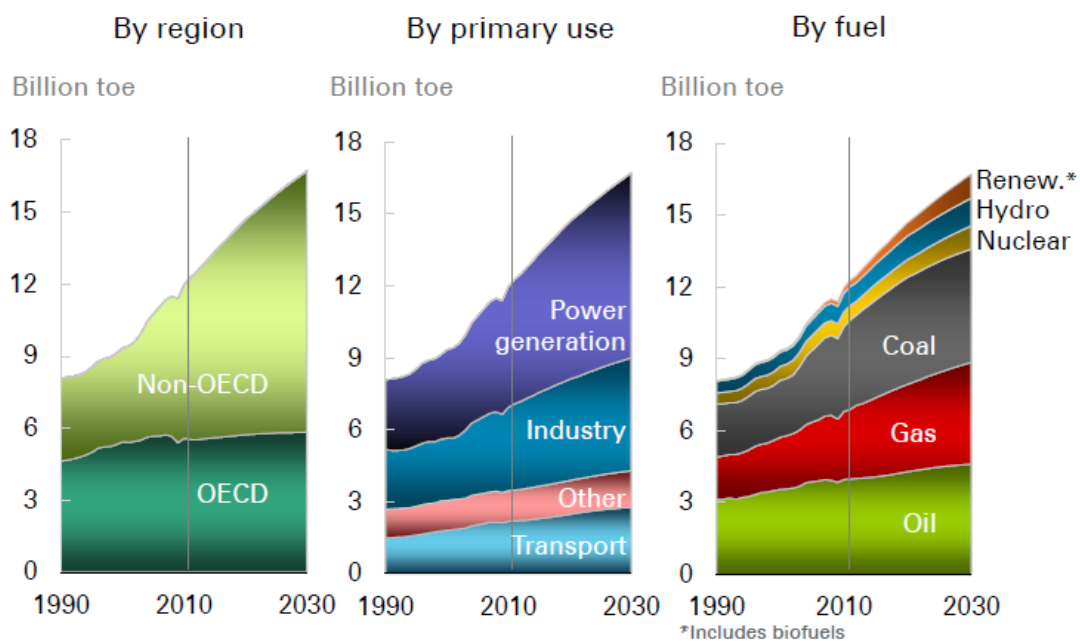


Fig. 12 – Power Growth by Sector and Fuel/Region

Source: BP Energy Outlook, 2013

The power sector leads primary energy growth...

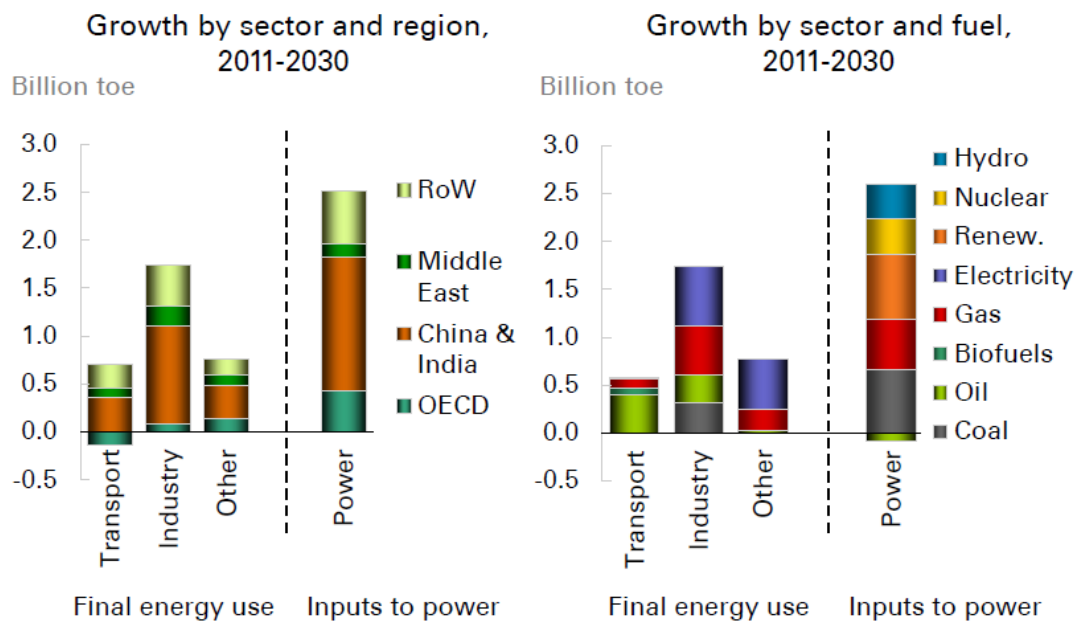


Fig. 13 – Energy Demand Growth

Source: BP Energy Outlook, 2013

Energy demand growth is matched by supply...

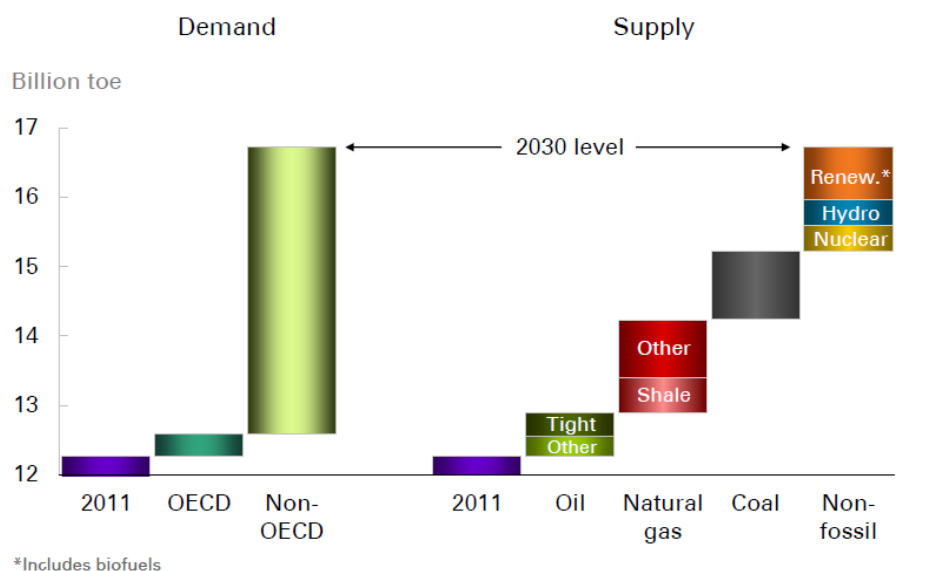


Fig. 14 – Energy Demand Growth and Supply

Source: BP Energy Outlook, 2013

Renewables continue to gain market share...

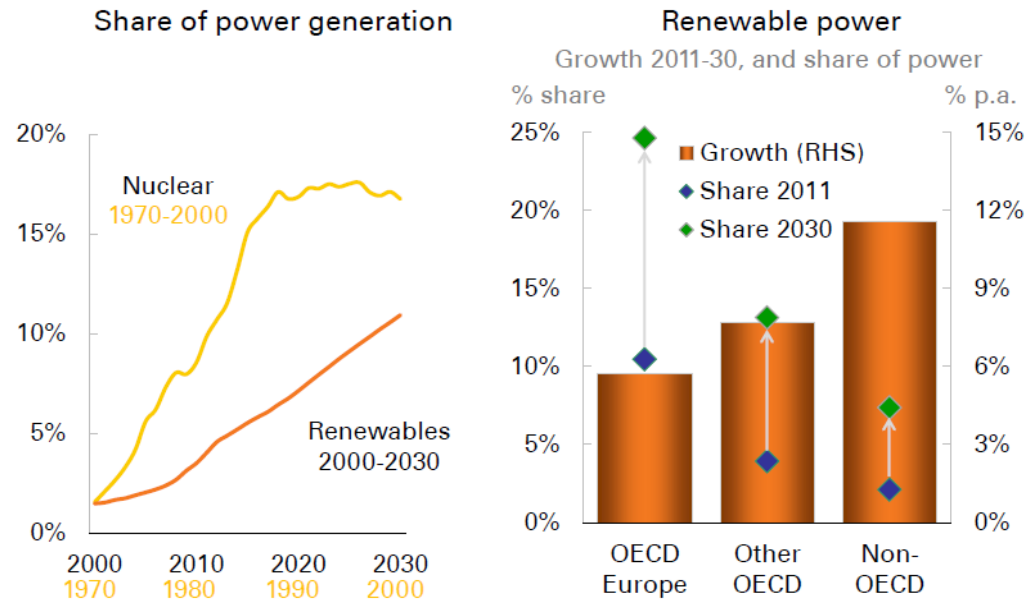


Fig. 15 – Renewables Market Share

Source: BP Energy Outlook, 2013

In what concerns future research, it would be interesting to design a survey focused on different organizations in order to access if there are good businesses practices and to deepen the present study.

It also might be relevant to divide the organizations study and the Green Energy Procurement in different perspectives and focus mostly in utilities, construction and transport companies, since they represent the major energy consumers.

Regarding the assessment of good practices and proper implementation, researchers should evaluate:

- Performance Indicators, that should be more than descriptive of environmental management systems / social:
- Inspections enforcement
- Environmental Performance (Reduction, Reuse and Recycling)

- Positive discrimination (project by project):
- Certifications
- Specific training
- Environmental Management Plan / Environmental Solutions
- Verification Audits

Moving further in the conclusions, Green Procurement should be intensified, business and consumers activities should be based on planning and transparency, with a sustainable oriented strategy.

However, since both businesses and consumers' activities are based, not only, but majorly on public policies, it would make good sense to research about the incentives and subsidies toward renewable energy uses compared to fossil fuels incentives, to analyze and compare their differences and, finally, assess if the public policies promote Sustainable Development and, therefore, green energy procurement. In this case, it would be helpful to analyze future publications and special reports on the subject to evaluate if these policies truly promote the alignment of energy policy, public finances and environmental goals.

BIBLIOGRAPHY

- Abdallah, T., Diabat, A., & Simchi-Levi, D. *A Carbon Sensitive Supply Chain Network Problem with Green Procurement*. Abu Dahbi: Department of Engineering Systems and Management Masdar Institute of Science and Technology .
- Abu-Ruman, M., & Craminckel, J. (2009). *Water Energy and Climate Change: A contribution from the business community*. USA: World Business Council for Sustainable Development.
- Arto, A., & Salthe, S. (2009). Economies Evolve by Energy Dispersal Entropy. 606-633.
- Bovens, M. (2007). Two concepts of accountability. *Utrecht School of Governance - Utrecht University* .
- Brammer, S., & Walker, H. (2010). Sustainable Procurement in the Public Sector: An International Comparative Study. *Emerald Insight* , 452-476.
- BP. (2013). *BP Energy Outlook 2013*.
- Brito, A., & Neves, L. (2012). Economics of Renewable and Cogeneration Energy in mainland Portugal. *EDP Serviço Universal, S.A.*
- Canada, G. o. (n.d.). *Industry Canada*. Retrieved June 2013, from Industry Canada: http://www.ic.gc.ca/eic/site/ee-ee.nsf/eng/h_ef00010.html
- Commission, E. (n.d.). Retrieved January 19, 2012, from European Commission - Environment - Sustainable Development: http://ec.europa.eu/environment/eussd/escp_en.htm
- Commission, E. (2010). *Europe 2020 - A strategy for smart, sustainable and inclusive growth*. Brussels.
- Commission, E. (s.d.). Obtido em 19 de January de 2012, de European Commission - Environment - Sustainable Development: http://ec.europa.eu/environment/eussd/escp_en.htm
- Communities, C. o. (2008). *Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions on the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan*. Brussels: Commission of the European Communities.
- Communities, C. o. (2004). *Buying Green - A Handbook on Environmental Public Procurement*. Brussels: Commission of The European Communities.
- Communities, C. o. (2007). *Directive 2004/17/EC of the European Parliament and of the Council coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors* . Official Journal of the European Union.
- Constanza, R. (1991). *Ecological Economics: The Science and Management of Sustainability*. New York: Columbia University Press.

Council, M. (2007). *Ministers Council Resolution No. 65/2007*.

Council, M. (2007). *Ministers Council Resolution No. 49/2007*.

Envirocentre. (2011). *EIGP - Green Public Procurement*. Retrieved January 18, 2012, from GPP - Green Public Procurement: <http://www.greenpublicprocurement.ie/#>

European Commission: Development and Cooperation - EuroAid. (2011, Janeiro 1). Retrieved Novembro 15, 2011, from Infrastructure For Sustainable Development: http://ec.europa.eu/europeaid/what/infrastructure-transport/index_en.htm

Eurostat. (s.d.). Obtido em May de 2013, de http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistics

ERSE. (2012). *Tarifas e Preços para a Energia Eléctrica e Outros Serviços em 2012*. ERSE.

Essays, U. (n.d.). *ukessays*. Retrieved June 2013, from <http://www.ukessays.com/dissertation/methodology/green-marketing-and-green-purchasing-behavior-marketing.php>

Fashion Indie. (n.d.). Retrieved may 2012, from Fashion Indie : <http://fashionindie.com/hm-conscious-collection-spring-2012/>

Goodland, R., & Daly, H. (1996). *Environmental Sustainability: Universal and Non-Negotiable*. Journal Storage.

Gouvernement, C. (2009). *Decreto-Lei n.º 278/2009*.

Hall, P. (2012). Why is Energy Important? *University of Waikato*.

Institute, W. R. (2005). *Millennium Ecosystem Assessment. Ecosystems and Human Well-Being: Biodiversity Synthesis*. Washington, DC.

K. Price, L., & T. McKane, A. (2009). *Policies and Measures to Realize Industrial Energy Efficiency and Mitigate Climate Change*. NY: United Nations.

Krembs, M., & A. Maddox, R. (2004). Green Power - what builders need to know about EA credit 6. *EDC*, 40- 47.

Lacroix, R.-N. (2011). Green Procurement and Entrepreneurship. *Kanotomein - EnXEIPEIN*.

Management Group, E. (2004). Background Paper on Sustainable Procurement and Environmental Management Programmes for the UN System.

Mode, S. (n.d.). *Study Mode*. Retrieved June 2013, from Study Mode: <http://www.studymode.com/essays/Advantages-Disadvantages-Of-Internet-In-738557.html>

Monkey, S. (n.d.). *Survey Monkey*. Retrieved 2012, from Survey Monkey: <http://pt.surveymonkey.com/>

Organization, W. T. (n.d.). *WTO - Ministerial Conferences*. Retrieved Janeiro 25, 2012, from http://www.wto.org/english/thewto_e/minist_e/min11_e/brief_gpa_e.htm

- Pinho Martins, A. P. (2010). *Estudo Exploratório a Realidade Portuguesa, nas Compras Sustentáveis*. Aveiro: Universidade de Aveiro - Departamento de Ambiente e Ornamento.
- Plas, G., & Erdmengel, C. (2000). *Green Purchasing Good Practice Guide*. Freiburg: International Council for Local Environmental Initiatives, European Eco-Procurement Programme and Eco-Efficient Economy.
- Pontes, J. P. (1994). O estudo de Caso na Investigação em Educação. *Matemática Quadrante*, Vol.3.
- Procurement, C. o. (2011). *Proposal for a Directive of the European Parliament*. Brussels : European Commission.
- Porter, M., & Kramer, M. (January de 2011). Creating Shared Value: How to reinvent capitalism- and unleash a wave of innovation and growth. Harvard Business Review.
- Rego, A., Pina e Cunha, M., Guimarães da Costa, N., Gonçalves, H., & Cabral-Cardoso, C. (2007). *Gestão Ética e Socialmente Responsável*. Lisboa: Editora RH.
- (2012). *Renewables Global Status Report*. Paris: Renewable Energy Policy Network.
- Russ-Eft, D., & Preskill, H. (2001). *Evaluation in Organizations*. New York: Basic Books.
- Salam, M. A. (2008). *An Emprirical Investigation of the Determinants of Adoption of Green Procurement for Successful Green Supply Chain Management*. Bangkok: School of Management, Assumption University.
- Sandberg, P., Kummer, K., Khan, N., & Leong, L. L. (2010). *Vision 2050 - The New Agenda For Business*. World Business Council For Sustainable Development.
- Silva, M. B., & Grigolo, T. M. (2002). *Metodologia para Iniciação Ciêntífica à Prática da Pesquisa e da Extensão II*. Florianópolis: Caderno Pedagógico.
- Srinivas, H. (n.d.). *SD Features*. Retrieved June 2013, from global Development Research Center: <http://www.gdrc.org/sustdev/concepts/04-e-effi.htm>
- (2011). *Sustainable Procurement*. Lisboa: Business Council for Sustainable Development Portugal.
- (2004). *Sustainable Procurement in the United Nations System*. United Nations, Division of Technology, Industry and Economics, Paris.
- Tavares, M. d. (2009). *Desenvolvimento Sustentável e Agenda 21 Local: Estudo Exploratório*. Aveiro: Universidade de Aveiro - Departamento de Economia, Gestão e Engenharia Industrial.
- UN-Energy. (2005). *Energy in the Uited Nations: An Overview of UN-Energy Activities*. New York: United Nations.
- UNEP. (2013). *GEO 5 Global Environmental Outlook*. United Nations Environmental Programme. ISBN: 978-92-807-3177-4.

Union, T. E. (2004). *Directive 2004/18/EC of the European Parliament and of the Council*. Official Journal of the European Union.

Van Zeller, F., Sêco, I., Inácio, I., Campos, C., Lima, V., Moura e Castro, J., et al. *Sustainable Procurement*. Lisboa: Business Council for Sustainable Development.

Vermeulen, W., & Ras, P. (2006). The challenge of greening global production chains: meeting both ends. *Sustainable Development* , 245-256.

Vilão, R., Venâncio, C., Sousa, A., Gervásio, I., Liberal, P., & Carvalho, T. (2010). *Relatório do Estado do Ambiente 2009*. Lisboa: Agência Portuguesa do Ambiente.

APPENDIX

Appendix 1 - Questionnaire

Na qualidade de investigadora convidada do CIGEST, encontro-me a realizar uma pesquisa sobre um tema relacionado com o da “Sustentabilidade”. O estudo desenvolve-se no âmbito do Mestrado em Gestão da Energia, no Instituto Superior de Gestão.

Este inquérito é anónimo e as suas respostas serão confidenciais e muito importantes para o diagnóstico inicial e prosseguimento da investigação na linha do estudo atrás referido.

Agradeço a sua colaboração.

1. Género

- F
- M

2. Idade

- Até 18 anos
- 19-24 anos
- 25-35 anos
- 36-45 anos
- 46-55 anos
- 56-65 anos
- Acima de 66 anos

3. Nível de escolaridade

- 9º ano
- 12º ano
- Licenciatura
- Pós-Graduação/Especialização

- Mestrado
- Doutoramento

4. Zona de residência

- Distrito de Lisboa
- Distrito do Porto
- Outro. Qual? _____

5. De que forma é que usualmente procura adquirir informação sobre a actualidade? Utilizando:

- Internet
- Televisão
- Jornais
- Revistas
- Revistas Científicas
- Outro (s). Qual/Quais? _____

6. Costuma procurar informação sobre o tema da “Sustentabilidade”?

- S
- N

6.1.Em caso afirmativo, qual o suporte de informação utilizado (siga os referidos na pergunta anterior)?

a) _____

7. Indique, do seu ponto de vista, a importância das seguintes hipóteses para o sucesso de uma empresa, sendo o **0** “nada importante”, o **1** “pouco importante”, o **2** “importante” e o **3** “muito importante”.

- Factor económico
- Responsabilidade Social
- Responsabilidade Ambiental

8. Está familiarizado como conceito de *Green Procurement*/ Política de Compras Ecológica?

b) S

c) N

8.1.Em caso afirmativo, apresente uma breve definição:_____

9. Já realizou algum trabalho sobre o tema *Green Procurement*/ Política de Compras Ecológica ou um trabalho para o qual o conhecimento sobre o tema possa ter contribuído?

d) S

e) N

9.1.Em caso afirmativo, especifique:_____

